

In This Issue—Seven Pages of New Accessories

MOTOR AGE

Vol. XLVI
Number 23

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CHICAGO, DECEMBER 4, 1924

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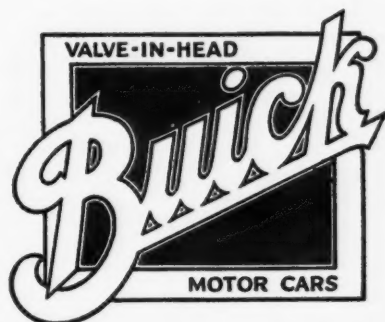
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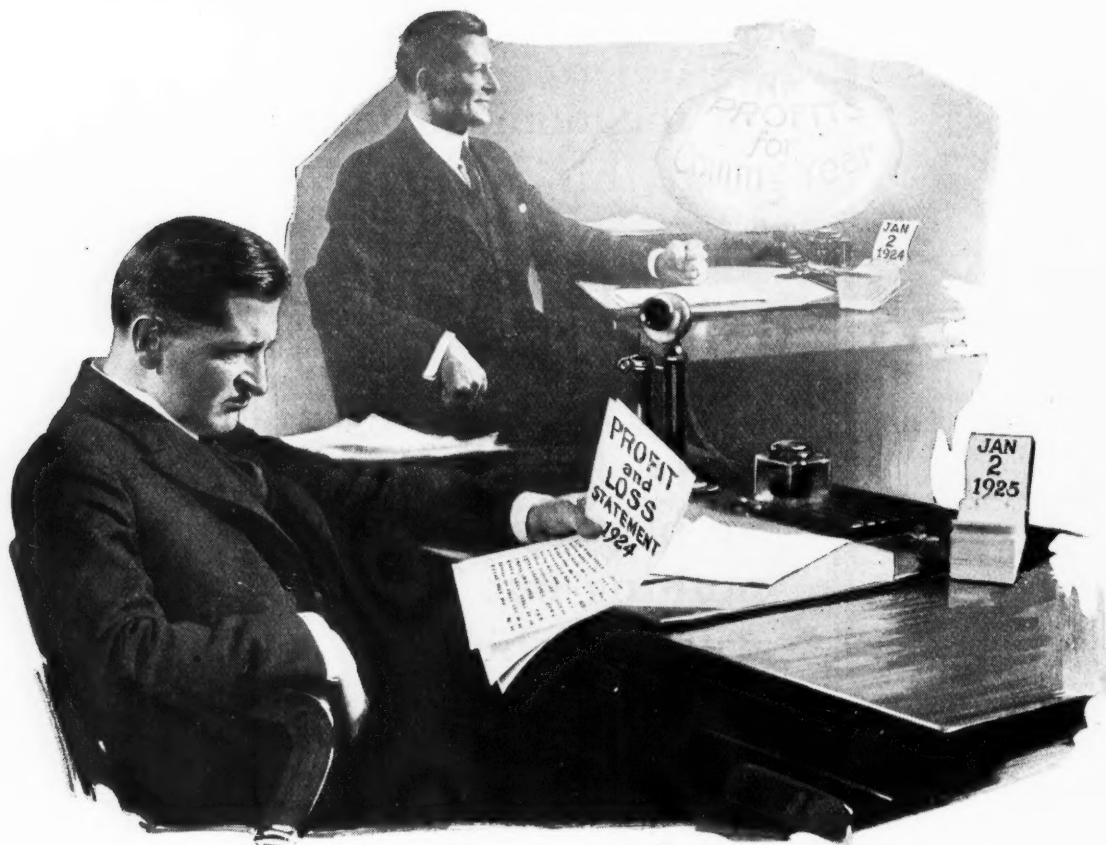
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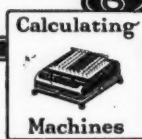
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MOTOR AGE

Reg. U. S. Pat. Office

Vol. XLVI.

No. 23

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have added many
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ment."*

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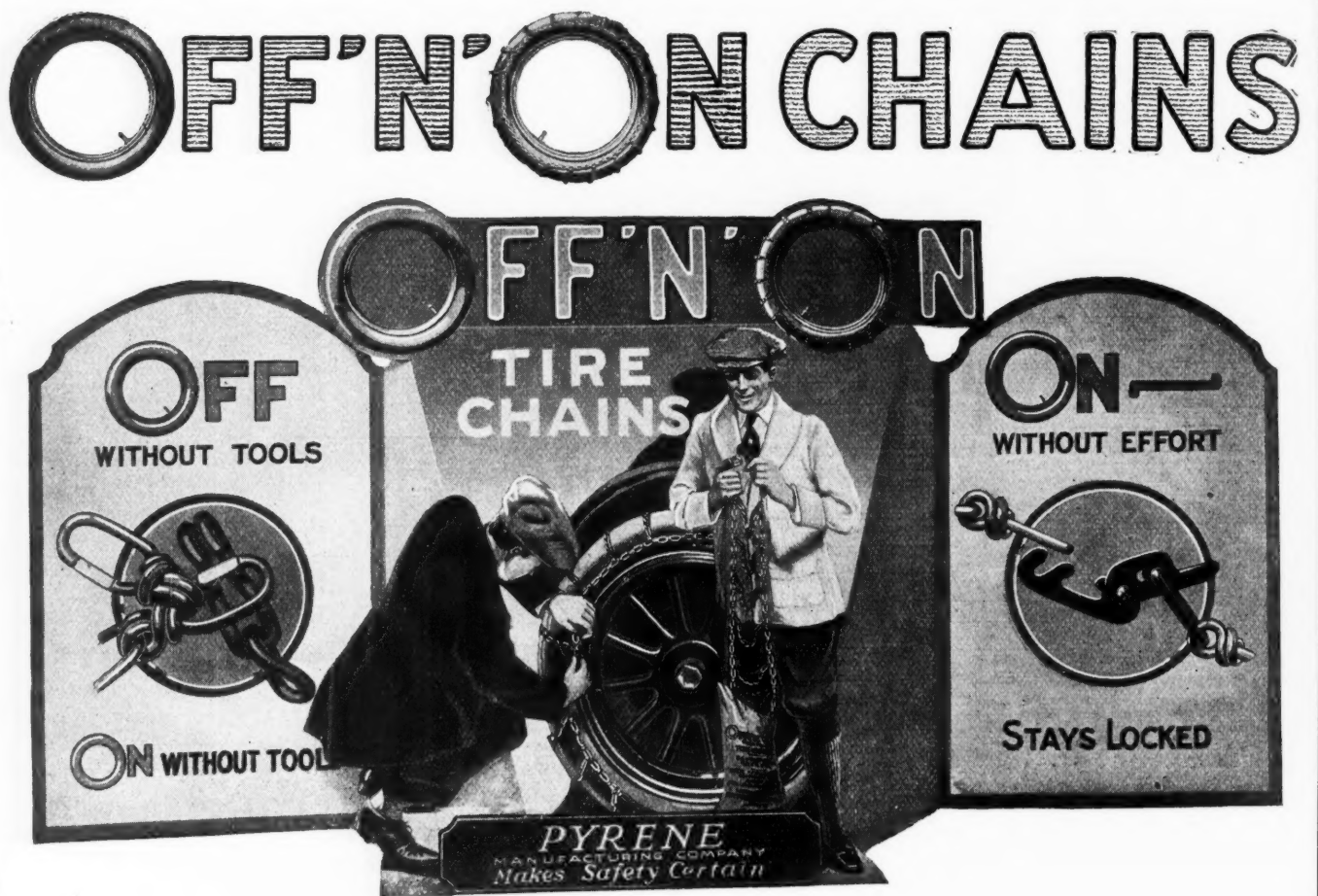
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These inquiries go immediately to dealers who are stocked with **OFF'N'ON TIRE CHAINS**.

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Test every motor for oil pumping and install a Ramco with every new piston ring on repair jobs. There is the Ramco profit as well as the piston ring profit in it for you.

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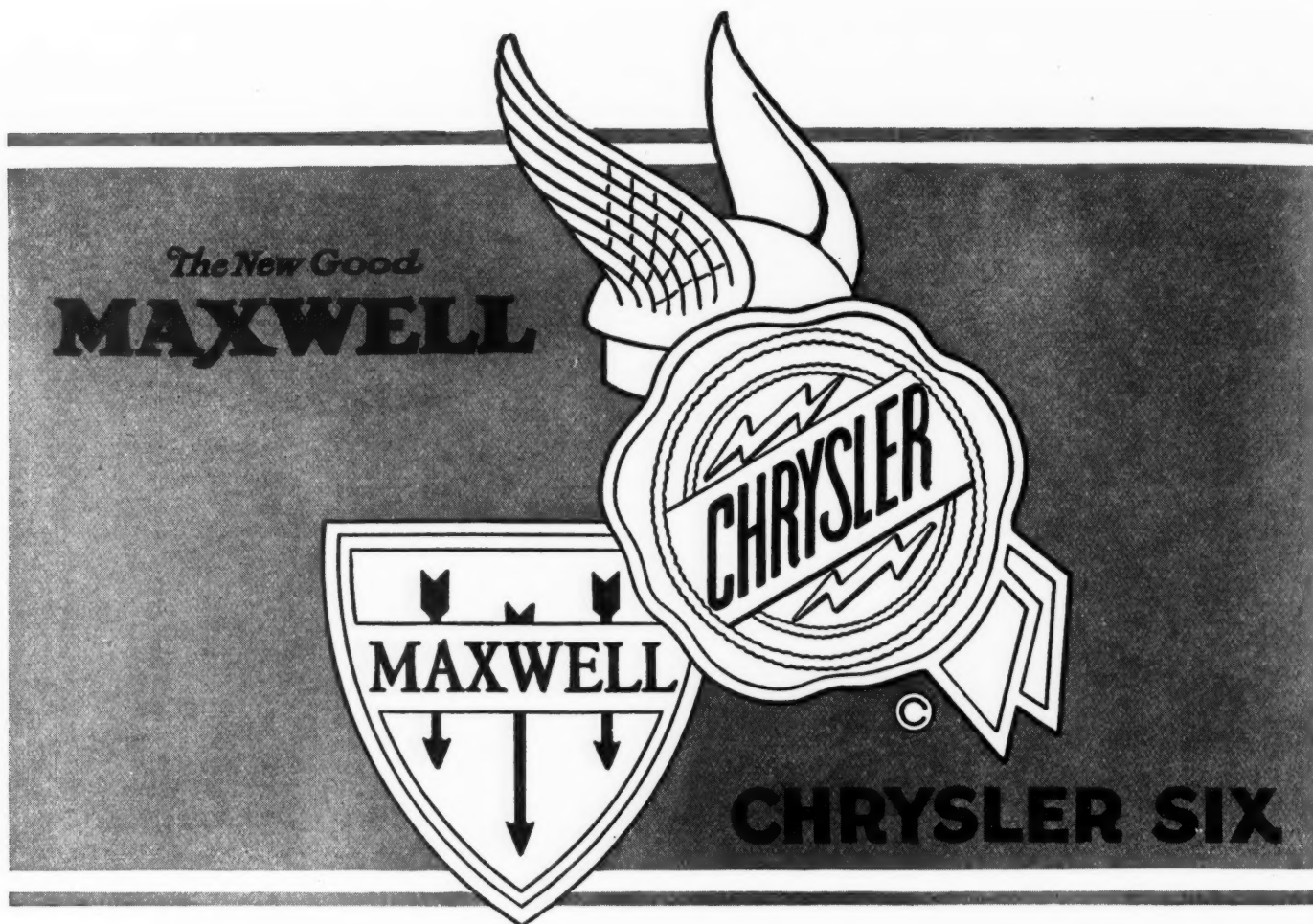
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MAXWELL-CHRYSLER MOTOR COMPANY OF CANADA, LTD. WINDSOR, ONT.

MOTOR AGE

Vol. XLVI

Chicago, December 4, 1924

No. 23

Departments Essential to Transportation Store

Automotive Business Requires the Operation of Several Distinct Divisions, Some of Which Must Be Separated From Others

BY B. M. IKERT

PROFITS SERIES

Utilization of Plant Capacity—No. 2

RETAIL store keepers found out long ago that certain kinds of stores go well together. Thus, hardware, housefurnishings and furniture complement each other. The same can be said of candy, flowers and ice cream. These things have something in common which makes it possible to group them without offending the esthetic taste of the public. Obviously it is hard to imagine a blacksmith shop next to a florist's establish-

ment. Retail store management long has guarded against such a situation and especially in the larger cities one will find certain classes of business set apart by themselves.

The larger stores are departmentized. Whereas in a small town we may find a hardware store, housefurnishings store and furniture store next to each other, in the large department store of the bigger towns we expect to find on the same floor the departments devoted to hardware,



Departmentizing can be overdone. Some establishments have too much room set aside for no good purpose. They are like the "best room" of years ago which was closed six days out of the week and only opened to "company" on Sundays

housefurnishings and furniture. It is logical that they should be, and this is one of the first essentials of intelligently doing business.

Must Keep Some Parts Separate

Unless a business is properly departmentized conditions will be chaotic and the operator of the business will never know definitely just where he stands. The deplorable situation of having a greasy mechanic working on part of a car with a salesman just a few feet away trying to sell a car to a woman prospect is one which forcibly illustrates a lack of departmentization existing too often in many motor car establishments.

As in any other business there are certain phases of the retail automobile business which must be kept separate from others. A piano salesman trying to sell a baby grand to a society matron would never tolerate a plumber with a blow torch wiping a lead joint close by, nor even a piano tuner, to make the case a little more mild. Such things simply do not go together well.

Right and Wrong Departmentization

Can you imagine a battery repair department alongside the showroom, or a tire department in with the accessory sales department? And yet, we have things equally as bad in some of the ill-conducted places of business which call themselves "Sale and Service" establishments of the automotive industry. The redeeming feature is that we have also places of business which are well laid out and departmentized in excellent manner. And, other things equal, those are the places of business where profits are realized.

There is a right and wrong way to departmentize the dealer's business. Many institutions are split up into various departments, but in which this has been done without any thought or logic. It does not take much effort or thought to merely divide a building into a series of rooms and then chuck the various divisions like battery department, tire repair, sales, shop, etc., into them just as these happen to come into mind. The same rule must be applied here as that used by an architect who strives to get the utmost out of a building and adapt it to the purpose sought. The greater part of this can be done on paper and for the dealer, garageman and others in the automotive business to seek to change their present layouts or who contemplate a new building we suggest they get a good sized pad of paper, a pencil with heavy lead, and then jot down all the things they expect to do in that place of business. Everything should be written down, then provision can be made to take care of every situation that may come up. Mistakes are easier to rectify on paper. It costs nothing to erase a line representing a partition, but it might take \$50 or \$100 to do so after the partition has been built. It is human to follow the line of least resistance and what generally happens is that once a partition has been built it stays, regardless of whether or not it is a profitable thing to have it there.

Three Main Departments

Just as we have seen that certain lines of business are complementary

to each other, so are the departments of the retail motor car establishment, the service station or garage, complementary to each other.

Every large organization has what is called a business chart. This chart shows graphically how the business is comprised of several departments or divisions and these departments are in turn split up into the various groups which logically go together. By thus departmentizing, the heads of the business are able to conduct it more efficiently and know also at all times which departments are profitable and which are losing investments. Without departmentization this would be impossible.

As was mentioned in last week's issue of MOTOR AGE, there are essentially three departments in every automotive dealer's business, assuming that he sells and services automotive vehicles and accessories and runs a shop or a garage for storage purposes. Most of the smaller town establishments are operated on the above basis, generally speaking.

The three main departments, or groups, consist of the office group (which consists also of the sales department, show room, accessory department, etc.), the shop and the garage.

Obviously there must be methods and machinery to run the business, and so, many persons refer to this part of the business as the administrative department. No business can get along without such a department. A man may be in business for himself and do all his own bookkeeping, execution of orders, delivery, etc., but just the same he must have some sort of business administration if he expects to make real profits from his business.

As an example, some repair shops do good work when it comes to carrying out the actual mechanical repairs on a motor vehicle, but fall down miserably when it comes to writing out orders and collecting bills. That's

a case of where the administration end of the business is not organized—not departmentized.

Under the sales and administration end of the business we can reasonably expect to find the following departments:

1. New and used car sales, including in some instances also trucks and tractors.
2. Accessory sales.
3. Parts sales.
4. Tire sales.
5. Showroom.
6. Offices and customers' rest room.

In the shop end the departmentization will include the following:

1. Machine shop.
2. Blacksmith shop.
3. Paint shop.
4. Battery and electrical department.
5. Tire repair department.
6. Top and trim department.

The garage is that division of the building wherein the following takes place:

1. Car storage, including new and

(Continued on page 38)



Some years ago most houses had what was called the "best room." On Sunday mornings mother threw open the sliding doors and for the whole day the room was open for inspection. The old "parlor" or "best room" has given way to the modern living room used day in day out. Many dealer establishments have a "best room" but a better name for it would be "waste room."

MILLER

Front Wheel Drive

Interesting details and photographs of the Miller front wheel drive racing car built for the late Jimmy Murphy will appear in next week's issue of MOTOR AGE.

Know That the Job Has Been Done Right

Extreme Care Is Necessary to Get Connecting Rods and Pistons to Run True in the Cylinder Bores. A Jig for This Saves the Shop Time and Money

By B. M. IKERT

(This is the eighth of a series of articles on the profitable use of shop equipment.)

ALIGNMENT plays a major part in engine work. When an engine leaves the factory every precaution is taken to have the crankshaft exactly parallel with the camshaft, to have the pistons run straight in the bores, to have the piston pin exactly at right angles to the piston and to be dead sure that the connecting rods are straight and operate exactly at right angles to the crankpin bearings of the crankshaft.

Scored pistons and cylinder bores, broken and worn piston pins, broken rings and loose bearings often result from nothing more than a misaligned connecting rod. Very often after a cylinder block has been reground by an expert grinder and a fine job has been done in fitting new pistons and rings the job is ruined by a mechanic who puts the engine together again just because he fails to check the alignment of the connecting rods. The natural result is that a cylinder wall scores and the first man to get the blame is usually the regrinder. That is why so many regrinders are going into what they choose to call "Motor Rebuilding" in which they do not only the work on the cylinder bores, but fit new pistons, rings, bearings, etc., and on top of this reassemble and tune the engines. In that way they have absolute control over their regrinding and the other work.

Line Up Rods Properly

Some mechanics are of the opinion that the alignment of connecting rods is not so highly important as some of the other work incidental to engine overhauling but as long as the rods should theoretically be straight so the pistons run dead true in the bores, there is everything to be gained and nothing to lose by making sure that the rods are lined

up properly before the engine is "but-toned up."

In the old days (and it is still done in some shops) a mechanic lined up rods by clamping an arbor in a vise, slipping the big end of the rod over this arbor and then squaring up the piston with an ordinary carpenter's square, as shown in one of the illustrations. In a similar manner the pistons were squared up by placing one arm of the square on the top of the upper half of the crankcase, assuming the engine to be of the type where the cylinder block is removable from the case.

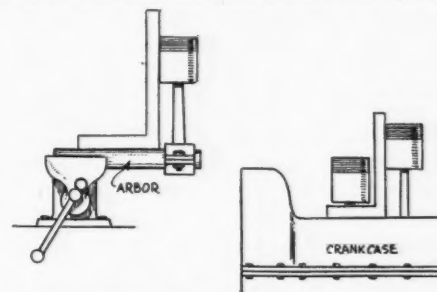
Squaring up the piston is all right as far as it goes, but a rod might still be twisted and yet not show this by the test. The test would show the piston to be substantially straight, or at right angles to a line drawn through the big end bearing, but in reality the piston pin might be considerably out of line with the crankpin. The result is that the piston is oscillated once on every downstroke and once on every upstroke.

A far better way to check the align-

are combination tools in that they are fixtures for rebabbiting the rod, boring or reaming it and then with the same setting offer a means for testing the alignment.

Connecting Rod Jig Valuable Tool

The basic principles of some of these testing devices is shown in an accompanying illustration. Naturally it is highly necessary that these tools and fixtures be accurately made and for that reason some of them may appear quite expensive to the shopman. But when it is realized that so much better a job is possible with them and there is every assurance that no "come back" is apt to

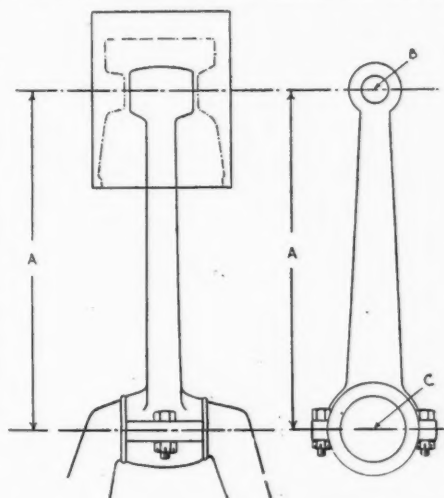


Two methods sometimes used to square up a piston. In one case the rod is clamped to an arbor. The top of the crankcase can also be used against which to place one arm of the square. These methods are not as good as those afforded by aligning fixtures

result from the work done, these devices soon pay for themselves. Especially is this so when they incorporate a bearing pouring and boring or reaming device.

A connecting rod jig is a most valuable tool in helping along the flat rate system and the bonus or piece work plan of paying mechanics. New connecting rods may be necessary in an engine and inasmuch as many see fit these days to ship rods with worn bearings to a concern making a specialty of this work and in return receive a similar set of rods all babbitted, it is easy to see that such rods must be checked for alignment. Just because a rod is new is no indication of its condition of straightness and twist. We recall a case of where a crankshaft of a small engine taken from the stockroom shelf was dropped upon the floor after it was checked with a dial indicator. It was .009 in. out as a result. Parts may become sprung in shipment and always should be tested before they are used in an engine. And in that respect it is just as necessary to test new rods.

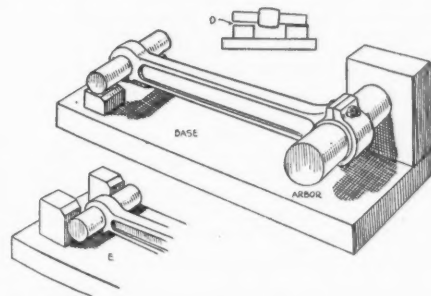
Especially in this day and age when we are making use of the small high speed engine in which the parts are highly stressed, is it necessary that every precaution be taken to have all parts properly lined up.



Here is shown diagrammatically the reason why it is necessary to have some means at hand for checking the alignment of a connecting rod. The center lines through the piston pin and crankshaft crankpin must be absolutely parallel, that is the distance A must be alike on each side of the piston. Also the rod must have no twist, that is, the centers of the circles B and C must be in line

ment of a connecting rod is to test the degree of parallelism between the crankpin end of the rod and the piston pin. Such a test not only checks up as to straightness of the rod, but takes in the twist as well.

There are on the market at the present time many excellent tools for checking the alignment of rods. Many of these



Basic principles of some of the connecting rod aligning devices now on the market. The arbor is parallel with the base plate and accurately ground blocks placed under and against the pin tell as to whether or not the pin is parallel with and in line with the crankpin. In practice the blocks are one piece and the piece slides in a slot in the base in much the same manner as a tailstock of a lathe

Aluminum Alloy Plays Big Part in Waukesha Bus Engine

Cylinders Have Short Water Jackets But Are Fitted With Long Barrel Extensions Housed Within Crankcase. Engine Has Six Cylinders and Develops 103 H. P. at 2000 R. P. M.

SEVERAL advanced features make the Waukesha model 6-A engine one of the most interesting developments in the field of six-cylinder bus engines. Liberal use and excellent distribution of aluminum alloy have produced a combination of relatively light weight and great rigidity. Although having six cylinders of 4½ in. dia. and a stroke of 5½ in., this engine ready for delivery weighs 1050 lbs. This weight is low when it is considered that the engine is designed to meet the heavy duty conditions of bus service. Among the unusual features are the Ricardo head, the mounting of the tappet carriers in the aluminum crankcase which is unusually deep, cylinders cast in pairs with comparatively short water jackets and long barrel extensions housed within the crankcase. The four bearing crankshaft has unusually heavy sections throughout and is made of chrome nickel steel. Particular attention has been paid to the camshaft and its characteristics of rigidity and therefore, silence.

Engine Smooth and Symmetrical

With a displacement of 549 cu. in., the curve of maximum power peaks at 103 h. p. at approximately 2000 r. p. m. A careful study of thermal conditions is responsible for this figure and the fact that curve of best economy goes as low as .56 lb. per h. p. hr. In conjunction with the specially developed Ricardo head, the compression ratio is fairly high although detonation is not experienced with ordinary fuels. As temperature conditions are largely responsible for continued economical operation due to the reduction of precipitation of moisture and fuel, the water jackets are fairly short, the lower ends of the cylinder barrels are oil-cooled within the crankcase and the water inlet into each cylinder block is located just below the cylinder head joint. These with the balance of the cooling provisions have been worked out to maintain high temperature values without danger of overheating.

As viewed externally, this engine is smooth and symmetrical. Crankcase, oil pan and detachable bell housing are cast aluminum, while the timing gear cover, cylinder blocks and detachable heads are cast iron. The crankcase is exceptionally deep extending from the centerline of the main bearings upward to the ell-shaped extension formed by the water jacket around the ports in the cylinder blocks. Lateral rigidity of the crankcase is assured by heavy flanges both deep and

wide, cored out for light weight and good metal distribution. The S. A. E. No. 2 bell housing bolts on to the rear end and provided two supporting arms and the cast iron timing gear housing which carries a barrel mounting concentric with the starting crankshaft bolts on the front end.

Internally, four well ribbed bulkheads carry the main bearings which are supported by deep section aluminum caps and four studs which are not threaded into the aluminum, but fitted with nuts

space is concentrated over the valves on the right side of the engine and the uppermost point of the piston head travel is practically flush with the top of the cylinder block. The latter is most unusual as the water jacket terminates just below the ports and the lower portions of the barrels extend into the crankcase for nearly 6 in. Water space is allowed all around the cylinder barrels and valve seats and although the lower ends of the barrels are joined through a short distance for the improvement of rigidity, an air gap separates them up to where they join with the outside of the water jacket.

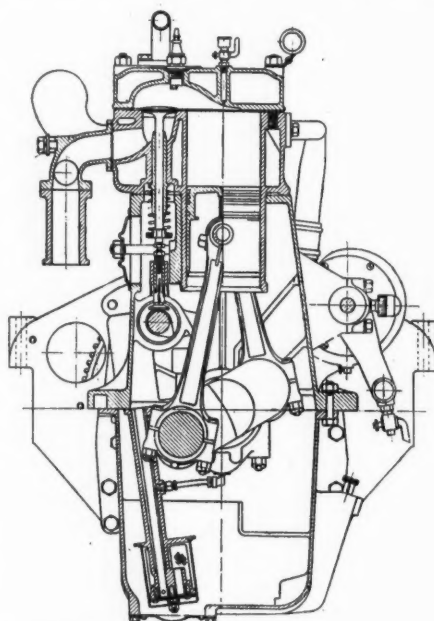
Drain Cocks at Bottom of Each Water Jacket

In this arrangement about 5 in. of the length of the cylinder barrel is water cooled, while the balance, nearly 6 in., is oil cooled by the crankcase lubricant. The water is introduced into the jackets at the centerline of each block of two cylinders and the opening is placed near the top. Drain cocks are placed at the bottom of each water jacket. Standard straight-thread spark plugs are located in the cylinder heads near the center of the concentrated areas of the combustion spaces. Individual water outlets are connected to the radiator by a brass tube type of header.

Intake ports are siamesed in each block while the exhaust ports are individual. Silchrome head valves of 2 in. clear dia. are centered in inserted cast iron bushings. The lower ends of the stems are case-hardened and the valve springs are secured by split washers and taper retainers. The intake and exhaust manifolds are located at the ports and held secure by clamps and studs. The clear diameter at the back end of the exhaust manifold is 3 in. and the intake manifold is designed to accommodate standard 1½ in. vertical carbureters. No hot spot is provided and the intake manifold is the simple horizontal branch type.

Mushroom Tappets Grouped in Carriers

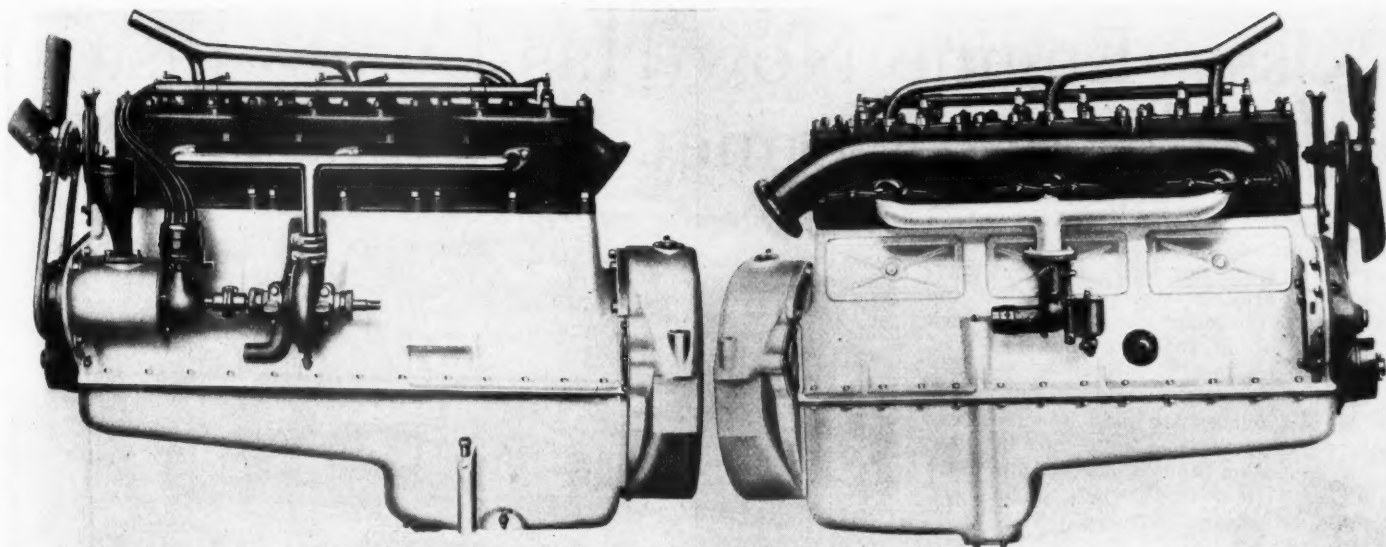
Mushroom tappets are grouped in carriers for each pair of cylinders and the three carriers are bolted and dowelled against finished bosses which are in turn located on a wall which runs the full length of the crankcase interior. A detachable plate secured by one stud covers each tappet carrier and permit easy adjustment or removal of the entire carrier. Like the crankshaft, the camshaft is mounted in four bearings which are



Cross section showing unusual arrangement of water jacket with cylinder barrels extending nearly 6 in. into crankcase

at both ends. All main bearings are 3 in. dia. and mounted in bronze back Fahrigh metal lined bushings. The front and two intermediate bearings are 2½ in. long and the flywheel bearing is 3½ in. long. The crankshaft is forged from chrome nickel-steel and weighs almost 150 lbs. in the rough. Heat treatment brings the elastic limit up to about 200,000 lbs. per sq. in. Connecting rods are 12¼ in. long between centers and the lower end is completed by a four bolt cap, the babbitt bearing being cast in. Crankpins are 2¼ in. dia. by 2½ in. long. The rod carries a bronze piston pin bearing of 1¼ in. dia. and 2¼ in. length. The pin is locked in a light alloy piston which is equipped with 4 perfect Circle rings, all located above the pin bearing.

With the Ricardo head, the combustion



Left: Water pump and distributor side of new Waukesha six-cylinder bus engine; right Carburetor and generator side of engine showing cap over oil pressure adjustment

bronze bushings in this case. To guard against camshaft deflection which is accountable for engine noises in many designs, the diameter of the shaft between the cams has been finished to $1 \frac{7}{16}$ in. and the exhaust cams which are subjected to the heavier loads are located next to the bearings. Graduated barrel type bearings allow the removal of the shaft from the front end and the Helical oil pump drive gear is cut in the middle of the third bearing from the front.

Helical metallic gears constitute the timing train at the front end. The crankshaft gear drives an idler which in turn drives the accessory shaft at the left side of the engine and the camshaft gear on the opposite side. The camshaft gear drives the generator pinion. Engineers of this company state that if care is taken in the cutting of metallic gears and more important, if the crankcase, crankshaft and camshaft are heavy enough to prevent whip and buckle, an all metallic timing train is as silent as chain or composition arrangements. Also, pressure feed to the front camshaft bearing is an important factor in obtaining this degree of silence.

Oil Pump at Lower End of Tubular Bracket

The oil pump is located on the center-line of the third main and camshaft bearings counting from the front and is carried at the lower end of a tubular bracket which is inclined at a slight angle from the vertical. A cylindrical filter screen surrounds the lower portion of the bracket and the pump body. From the pump the oil is delivered to fittings on each of the bulkheads by copper tubing. At each of these bulkheads, these lines are again connected to the main and camshaft bearings. This arrangement in conjunction with a drilled crankshaft insures full pressure lubrication for all of the bearings. A drop pan and extension through arrangement which forms part of the crankcase pan insures an adequate supply of oil on the most acute grades

also when the supply is low. An opening and cover are located just below the pump body and a bayonet gage is located on the left side of the pan.

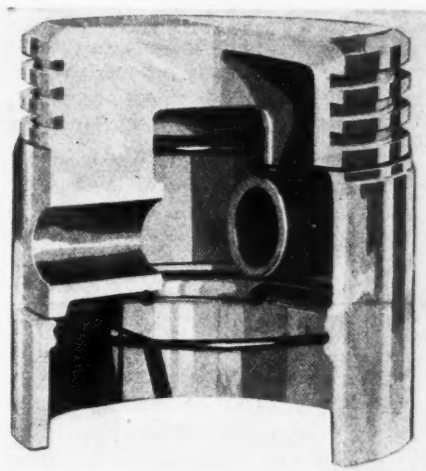
Generator of $7\frac{1}{2}$ in. Maximum Diameter

Large bronze bushings carry the accessory drive shaft in a barrel shaped projection at the left front of the engine. This projection is fitted with a breather and filler cap at the top and a bracket for an ignition head mounting at the rear. The driveshaft extends to the rear and is coupled to the shaft of a centrifugal pump which is carried in saddles machined in two projections from the crankcase wall. Two bolts are located at each side of the pump and the packing gland adjusting nuts are outside of the projections and easily accessible. Another shaft to the rear of the pump accommodates the magneto and provisions are being made at this point for the installation of an air compressor for braking service.

On the opposite side, the timing case extends to allow room for a generator of $7\frac{1}{2}$ in. maximum dia. with a flange mounting. A starting motor of $5\frac{1}{2}$ in. dia. can be placed on either side of the engine as S. A. E. flange mountings are machined on both sides of the bell housing. An adjustable slide is attached to the front of the crankcase to accommodate a 20 in. dia. fan with a $1\frac{3}{4}$ in. range of adjustment, the fan drive being taken by V-type pulleys and cord belt from the front end of the accessory shaft. A conical projection extending forward from the barrel mounting on the timing gear cover encloses the starting crankshaft. Although no governor is shown in the accompanying illustrations, the Waukesha Motor Co. is preparing to make provisions for the centrifugal governor which has been standard on its heavy duty engines for several years. In this installation, centrifugal weights are carried in the camshaft gear and the necessary linkage back to the throttle valve is completely housed.

New Aluminum Alloy Piston

This piston is an aluminum alloy said to combine great elasticity and strength. The skirt is slotted in such a way that each segment extends more than half way around the piston. These flexible segments allow the diameter of the piston to be automatically increased or decreased as much as $\frac{1}{16}$ in., it is stated. Two steel springs are inserted inside this piston, one below and the other above the bosses and these springs are adjusted at the factory for each make of car. In as much as they are constantly flooded with oil they will not rust. The company claims that the piston can be fitted without any clearance. They are made by the Master Piston Corp., 114 West Mount Royal avenue, Baltimore, Md.



The Master piston

Kissel Engine Now Has Lynite Pistons and Connecting Rods

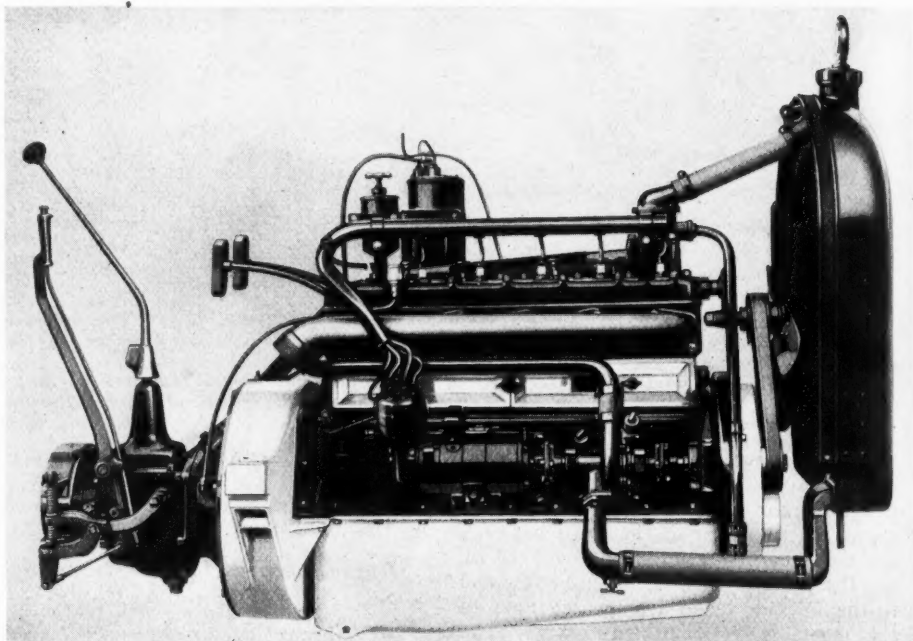
SEVERAL refinements have been made in the Kissel six-cylinder engine and one of the most outstanding features is the reduction of the weight of the reciprocating parts obtained by the use of Lynite pistons and connecting rods.

Exceedingly light weight pistons weighing 15¼ ounces are used, the new features of which are a split skirt to allow for expansion, and two wrist pin bearings on either side. These pistons are fitted with Teetor Perfect Circle oil regulating rings.

Saving of 14 lbs.

Lynite connecting rods weighing but 18¼ ounces without bearings have replaced the forged steel type formerly used. These rods are accurately balanced and fitted to a .0015 to .002 in. clearance at the bearings. The wrist pins are anchored to the upper end of the connecting rods with bearings in the piston skirt. These new rods and pistons effect a saving of 14 lbs. in the reciprocating parts and are accountable, to a large extent, for the engine's smoothness and absence of vibration at any speed.

The engine has a new full pressure oiling system by means of which the main bearings, camshaft bearings, connecting rod bearings and front end drive float in a constant film of oil maintained under pressure. Filtered oil from the crank case is forced to these bearings through leads in the crankshaft by means of a high pressure oil pump.



The engine used in the present Kissel models and in which a saving of 14 lbs. was made through lighter reciprocating parts

Another new feature is found in the improved oil basin of cast aluminum which is deeper and has a larger capacity, thus affording an additional supply of oil and more effective lubrication. It also permits of two machined surfaces for closer gasket fittings which eliminates oil leakage.

An improvement has been made in the water pump which is constructed as a complete unit and is connected with the generator shaft by two flexible flange points and studs which makes it more accessible and very easy to remove for repairing or repacking when necessary.

Rickenbacker 8 Electrical System

THE starting motor and generator on the new Rickenbacker "Eight" are made by the American Bosch Magneto Corporation, who have been supplying all the starting, lighting and ignition units used on the Rickenbacker "Six" for the past two years.

The generator is the same as that used on the "Six" except for changes in the S. A. E. mounting flange required for application to the new "Eight" engine.

It is a standard 4 in. Bosch generator, with third brush control, and is driven from the timing gears on the right hand side of the engine. This generator, which is known as Type No. 1055, gives a maximum output of 12 to 14 amperes at 7½ volts at an engine speed of approximately 1200 r.p.m.

The commutator endplate carries the water pump, as is customary on all Rickenbacker mountings.

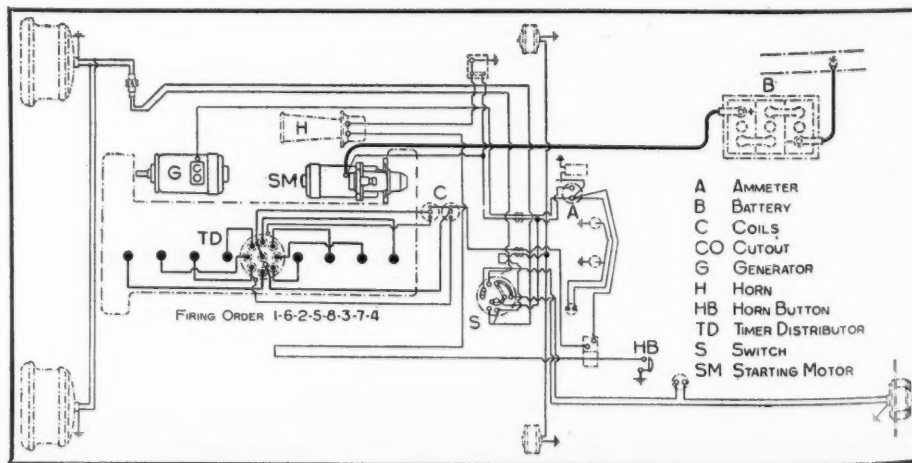
The Bosch starting motor on the Rickenbacker "Eight" is known as Type 947. It is of 4 in. size, but different from

that used on the Rickenbacker "Six". It is a gear reduction job with flange mounting, employing an overrunning clutch between starting motor pinion and auxiliary shaft, over which slides a manually operated gear which engages with the flywheel.

The Type S-203 starting switch is

mounted on top of the motor, and the same manual control which meshes the gear with the flywheel also operates the starting switch.

The wiring system is of the ground return type, the negative side of the battery, generator and lamps being grounded as shown in the wiring diagram.



New Wohlrab Steering Gear Announced

Product Is Featured by Positive Outside Adjustment Which Enables It to Be Set Up to Any Desired Driving Condition

THE Wohlrab Gear Company, Racine, Wisconsin, have recently placed on the market a new model steering gear, which is an addition to their regular line. The patent for the new gear was issued August 22nd, 1922. The new model which does not supersede the balanced pressure gear which this firm has been marketing for several years has been brought out to meet steering requirements demanded by low pressure balloon type tires. The gear is featured by positive outside adjustment which enables it to be set up to any desired driving condition and is the design of Mr. P. B. Wohlrab, president and engineer of the Wohlrab Gear Company and formerly vice-president and chief engineer of the Lavigne Gear Company, Racine, Wisconsin.

The construction is conventional in most respects and comprises a screw and bronze half nut mounted in a one piece oil tight housing. The worm screw is of $\frac{5}{8}$ inch pitch with the threads tapered 25 degrees. There is a bottom and top thread clearance of .035 of an inch in

the half nut to allow for take up. One side of the bronze half nut is slotted to engage a hardened steel sliding block which swivels on the trunnion shaft pin at the inner end.

Manufactured in Two Styles

The trunnion shaft has an offset of $1\frac{1}{8}$ inches measured from the center of the worm shaft to the center of the trunnion shaft pin.

The cover of the gear housing is held in place by six cap screws which fit into elongated holes. Two set screws mounted in the half nut side of the housing engage a take up slide which is an integral part of the housing cover. This take up slide guides the bronze half nut, and through the medium of the elongated cover holes allows movement of the nut in or out of mesh with the worm screw, thus taking up any possible play between mating threads. The usual vertical thrust adjustment is also provided.

The new model gear is manufactured

in two styles to replace either the conventional worm and gear or offset type or the straight center or split nut style of steering gears as now in use.

This gear is also manufactured as a Ford replacement proposition and the manufacturers state that according to present plans, this market will take the bulk of their production.

When applied to a Ford the lower head of the Wohlrab gear only is supplied while the original equipment such as control rods, mast and the regular hand wheel remain the same except that the three small pinions located in the gear box under the hand wheel are removed and a locking plate furnished with the gear head inserted instead. This latter piece couples the hand wheel to the main shaft making one direct solid unit eliminating the reduction gear entirely. A detail drawing of the Ford type is together with half-tone illustration.

All models are regularly equipped with plain thrust bearings but double ball or roller thrust bearings can be furnished on order.

Brains and Tools Worthy of Their Hire

The well-equipped shop, both from the standpoint of tools and personnel, gets a good boost from a Chicago car owner who had an unfortunate experience in trying to save money on a repair operation by having a neighbor mechanic do the work at home. The cost per hour looked small but the ultimate cost was beyond calculating. In the following letter, published by the Chicago Automobile Trade Association, this car owner shows he has learned a lesson:

"I often wonder if other people have experiences in trying to save money that are as bitter as mine.

"One day last summer I failed to notice that my automobile was low in oil, and I burned out my bearings on a country road, five miles from the farm where I was living.

"Fortunately, I was invited by a passing motorist to ride home with him.

"A city mechanic who lived near me had told me several times that he understood automobiles and that he would be glad to do any repair work my machine might require. I knew that his hour charge was about half that of a city service station, and so I decided this would be a good chance to save some money.

"I told him to tow the car in, and put it in order.

"This was late Saturday afternoon.

"By nine o'clock, he had torn down the motor and had the parts strewn over the floor of the garage. He could work only a couple of hours on Sunday because his family had visitors, and anyway he had no new parts.

"By Wednesday he had the car to-

gether and hitting on three cylinders. He had easily wasted two-thirds of the time performing operations with tools that were not made for the purpose. He had also smoked several of my cigars, and, of course, we had to keep a supply of beverages on ice for his consumption.

"Thursday, Friday and Saturday nights he tinkered with it some more, but as soon as he got one thing fixed something else went wrong. Not being mechanically inclined myself, I was unable to help, but I still felt that as a matter of neighborliness I ought to give the moral support of my presence. I 'stood by' until my back began to crack. I neglected my family, kept dinner waiting, and soon heard remarks which were decidedly 'personal'.

"On Monday I drove the car into town—or rather almost into town. It died in a terrible agony.

"So I called up a dollar-and-a-half-an-hour service station and told them to tow it in, and telephone me the result of the diagnosis.

"When I received the report, I asked them what they would give me for the car on a trade-in.

"I accepted the offer.

"It isn't often that I let myself in for anything like this, because I have had previous experiences which have convinced me that you seldom get anything you don't pay for.

"However, I now know that one of the items included in a dollar-and-a-half-an-hour service station is a supply of efficient tools which save about three-fourths of the mechanic's time. Another item is experience, which means a knowledge of just how to do a job, whether a job is worth doing, and also the courage to express an opinion.

"Overhead is a heavy item sometimes, but brains and tools, like labor, are worthy of their hire. I've found it pays to hire them."

A Book for Salesmen

A booklet entitled "How to Successfully Sell the Wills Sainte Claire" has been published by Wills Sainte Claire, Inc., Marysville, Mich. The booklet was written by C. Harold Wills, president of the company. It contains valuable instructions for salesmen under the headings of "Know What You Are Selling," "Analyze Yourself," "Study the Car," "Prospects," "Price vs. Quality," "The Approach," "Style and Beauty," "Comfort and Convenience," "The Demonstration," "The Order," and concludes with a detailed tabulation of 18 outstanding features of the Wills Sainte Claire car.

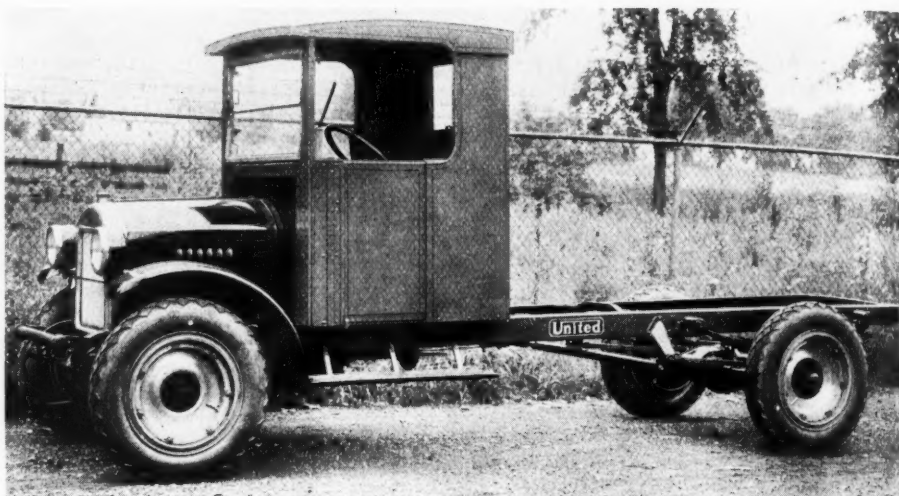
Two New Truck Models Brought Out By United Motors Products Co.

TWO new trucks with capacities of $1\frac{1}{4}$ and 2 tons respectively have been brought out by the United Motors Products Co., Grand Rapids, Mich. The new models are designed particularly for rapid transportation service and have a speed rating of 35 m.p.h. The wheelbases are 131 and 150 inches respectively.

Both models use a Hercules Model OX, four-cylinder engine with 4-in bore and 5-in. stroke, which is said to develop 39 hp. at 1600 r.p.m. Pressure lubrication is provided at the three main bearings and at the connecting rod bearings by a gear oil pump. Electrical equipment includes a two-unit, American Bosch starting lighting system, Prest-O-Lite 6-volt battery, and a high tension magneto.

Brown-Lipe clutches and transmissions, mounted as units with the engine, are used in both models. The gear reductions provided by the transmissions are low, 4.09 to 1; second, 1.68 to 1; high, 1 to 1; reverse, 5 to 1. Power is transmitted to the rear axle through a 2-in. tubular propeller shaft with Blood universals at either end.

In the smaller model, the rear axle is a three-quarter floating Columbia with helical reduction gears providing a ratio of 5.1 to 1. The 2-ton model has a



The 2-ton chassis of the United Motors Products Co. truck. This model has a speed of 35 m.p.h. Note the spring type radius rod

double reduction Wisconsin axle, the initial reduction being by bevel and the final by spur gears. The overall reduction is 7 to 1. Front axles have the usual I-beam section and the steering gears are of Lavine make.

Pneumatic tires on demountable rims are regular equipment on the two models. On the smaller truck the size is 30x5 in. and on the larger, 32x6 in. The former model is regularly equipped with cast

steel wheels while the latter is fitted with the cast aluminum disk type.

Standard equipment includes tools, jack, tire pump and pressure oil gun for the Alemite chassis lubricating system. The headlamps are of the barrel type with nickel rims. The radiator shells are also finished in nickel. The running gear and wheels are painted a burnt orange and the hood, dash and fenders have a baked black enamel finish.

Acme Company Adds New Truck

ONE of the latest additions to the light truck field is the Acme Flyer which has been recently added by the Acme Motor Truck Co., Cadillac, Mich.

Attention has been given to working out a pleasing appearance for the truck. A streamline effect has been achieved in the hood and cowl which will harmonize with well designed bodies. A closed cab has been designed, equipped with wide, accessible doors. An express body following general standard practice has also been designed with a canopy to fit it.

A load capacity of 2000 lbs. is provided for. The power consists of the Continental engine known as the S4 model, with a bore of $4\frac{1}{4}$ in. and stroke of $4\frac{1}{2}$ in. The S. A. E. horse power is rated at 28.9, while the brake horse power is 50 at 2200 r.p.m. This provides ample power for a speed of 35 m.p.h.

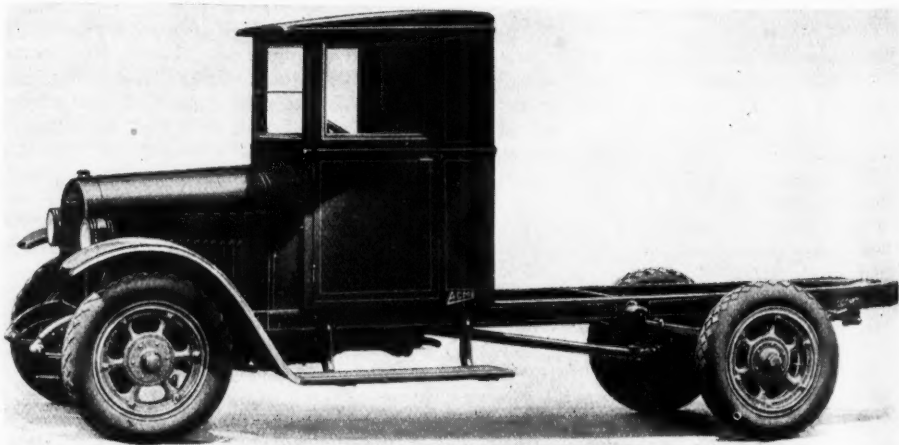
The wheelbase is 130 in. while the turning radius of 20 ft. makes city operation convenient. The frame length back of the driver's seat measures 97 in. with a 189 in. over all length. The top of the frame is $27\frac{1}{2}$ in. from the ground, while from the floor of the express body setting between the wheels to the ground

is approximately 30 in., giving a low center of gravity. The length of the body can range from 86 in. to a maximum of 108 in.

The frame is of pressed steel, semi-flexible, with a width back of the seat of 34 in. Springs are bronze bushed, with the front pair $2\frac{1}{2}$ in. wide and 38 in. long—the rear, $2\frac{1}{2}$ in. wide and 52 in. long.

Brakes are internal expanding and external contracting, with a 16 in. diameter drum. Emergency and service bands are $2\frac{1}{4}$ in. wide and $2\frac{1}{2}$ in. wide respectively.

A heavy bevel gear drive supplies the power to the rear axle, with a gear ratio of 5.1 to 1. It is of the full floating type, with taper roller bearings throughout, and two bearings to each wheel hub.



The new Acme Flyer which has a load capacity of 2000 lbs.

Wide Variety of Products Shown at Big A. E. A. Exhibit in Chicago

Accessories and Shop Equipment Designed to Serve a Number of Useful and Practical Purposes. Radio Is Receiving Increased Attention at Hands of Automotive Dealers

WINDSHIELD wings for 1925 Studebaker cars were shown by the Benzer Corp., Myrtle & Cooper aces., Brooklyn, N. Y. In attaching it is not necessary to drill any holes and the wings do not interfere with the use of the side curtains. Plate glass and bronze are used in the construction of these wings, the bronze parts being nickel plated. The price is \$20 per pair.

A radio battery tray also was displayed, this being for the purpose of protecting the floor or rug from battery



acid. It is large enough to accommodate a 120 amp. hr. radio battery. The price of this tray is \$1.50.

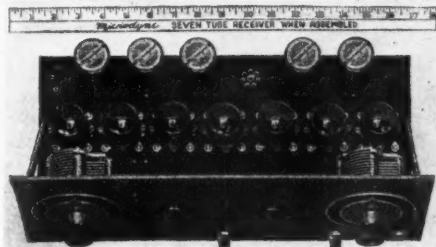
With the Benzer line of glass vases for closed cars, an assortment of artificial flowers is now available, which greatly facilitates sales. The vase with flowers sells at \$2.

Apex Microdyne Radio Receiver

A seven tube super-heterodyne knock-down receiver is offered by the Apex Electric Mfg. Co., Chicago. The complete receiver unit is mounted on a 7x18 in. panel with all wires concealed. The set uses seven tubes, 201-A or UV199, and has a battery consumption of 12 milliamperes. The knock-down set consists of all the parts for the receiver and all of the necessary construction diagrams, photographs and instruction sheets. All

ON this and succeeding pages appear the remainder of descriptions of new products shown at the A. E. A. exhibit held in the Coliseum, Chicago, recently and gathered by MOTOR AGE staff. Previous installments appeared in the November 20 and 27 issues.

parts visible on panel are gold plated and Apex vernier dials are furnished. The price is \$97.50.



The firm is also building a complete line of radio accessories including transformers, filters, and vernier dials.

Circle Ess Co-Incidental Wheel Lock

A combined wheel and ignition lock. Provided with a safety device so that wheel cannot be accidentally locked or unlocked until key is pressed against a spring tension as far as it will go before it can be turned either way. Approved by Underwriters Laboratories under Group I. The price is \$10.

The Co-Incidental lock is one of sev-

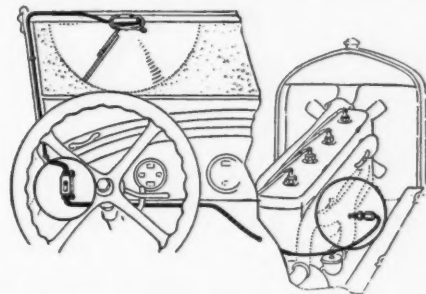


eral styles of wheel locks just announced. The prices of the other models now being marketed range from \$5.50 for the Competitive model to \$15.25 for the combination Co-Incidental Lock, Wheel, Cap, and Horn Button.

A line of special steering wheels and combination steering wheel and horn button assemblies is also being marketed.

Outlook Pneumatic Windshield

The Outlook Pneumatic windshield cleaner, made by The Outlook Co., Cleveland, O., operates from the vacuum of the intake manifold and includes in addition to the conventional hose connection a switch on the dash or instrument board, which makes the control very convenient. Not only can the device be turned on and off but it can be slowed up if desired. The switch is also sold separately for installation with other systems. The switches are mounted on



a card for counter display, there being a dozen to a card.

The cleaner itself is so constructed that the largest section is at right angles to the windshield and therefore is practically out of the line of vision. A hand control is also provided for emergency use and to put the wiper up out of the way, when the device is stopped.

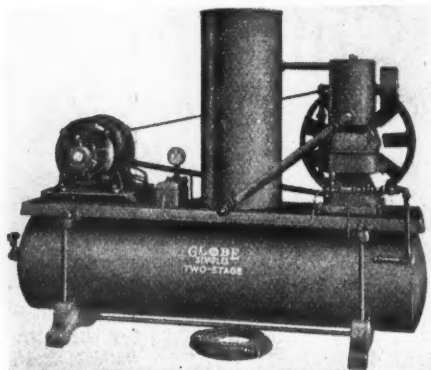
Biflex Superb Rear Bumper

This is a new model rear bumper incorporating the distinctive Biflex loop end construction. The new model has an



extra shock absorbing loop placed directly behind the new style bronze fitting at each end. Larger in every dimension than the previous models put out by this company. Comes equipped with the new Hingedrop fastening brackets.

Utility Is Aim of New Products



Globe Automatic Water Cooled Compressor Unit

The compressor, motor, 25-gallon water cooled tank and automatic control are mounted on steel storage tank with iron base. The outfit can be operated continuously up to 200 lbs. pressure. It includes belt, pressure gage with needle valve and fittings as shown, 25 ft. air hose, with Globe simplex chuck and couplings attached. Safety valve, check valve and automatic pressure unloader, regular equipment.

The compressor is made in two models, the R458 with three horse power motor and the R458S with five horse power motor for any current.

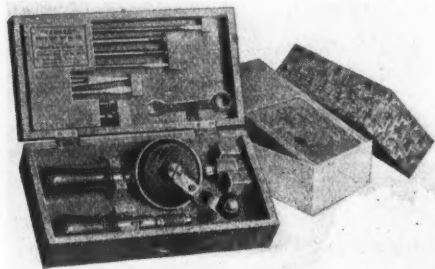
The smaller unit has a displacement of 12 cubic feet of free air per minute, operates at a speed of 250 r.p.m. The air tank unit is of 60 gallon capacity. Shipping weight 1200 lbs. Prices for the R458 range from \$625 for the 60 cycle, three phase A. C. motor to \$800 for the 25 cycle single phase A. C. motor.

The model R458S has a displacement of 20 cubic feet of free air per minute and operates at 400 r.p.m. The air tank has a capacity of 80 gallons. Prices on this model range from \$675 for the 60 cycle three phase A. C. to \$915 for the 25 cycle single phase A. C. motor.

The manufacturer is the Globe Mfg. Co., Battle Creek, Mich.

"Yankee" Radio Tool Set No. 106

The "Yankee" radio tool set No. 106 comprises set No. 105 together with radio drill No. 1431. These two are combined together with a suitable box making the

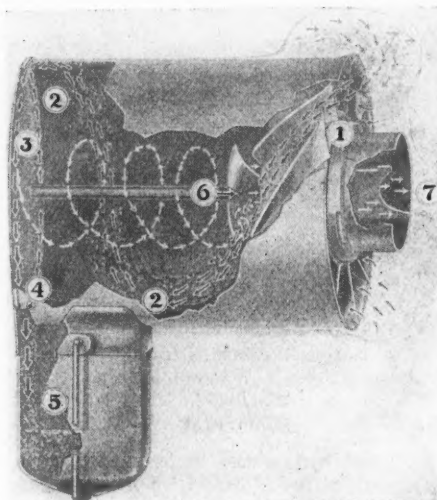


whole outfit a popular Christmas gift for the radio fan. The No. 105 set includes a long screw driver blade, a short one and a heavy screw driver blade. Also a

countersink, a reamer, a wire bender, two socket wrenches and a flat wrench. The hand drill has 4 to 1 gear for speed and is equipped with a special radio chuck, taking drills up to $\frac{3}{8}$ inch. The No. 105 set only which includes the ratchet handle for operating the various tools sells for \$3.25 when the complete set is not desired. The set costs \$8.50.

A. C. Air Cleaner

A. C. Spark Plug Co., Flint, Mich., displayed a labyrinth type of air cleaner, the latest addition to the A. C. line. There are no moving parts in the device which functions as follows: The suction stroke of the engine causes air to enter the cleaner between the directing vanes which give it a rapid spirally rotating motion. The spiral travel of the dust along the inside surface of the cleaner



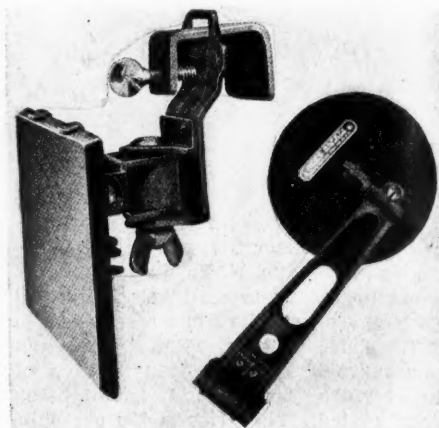
wall brings it to the rear circular end. The centrifugal force developed causes the dust to impinge against the wall and back of cleaner from where it passes through a small outlet to the removable container shown at 5 in the illustration. The clean air indicated by white arrows strikes the directing plate 6, screws itself out of the cleaner to enter the carburetor at 7 which is the point of attachment of the cleaner.

Rees Safety Mirrors

The type SW mirror illustrated, made by The Rees Mfg. Co., Pittsburgh, Pa., is one of the complete new line of passenger and commercial car safety mirrors exhibited by this company. The mirror illustrated is 5 in. in diameter and equipped with heavy duty rust proof brackets for installation on commercial vehicles. The price is \$2.50.

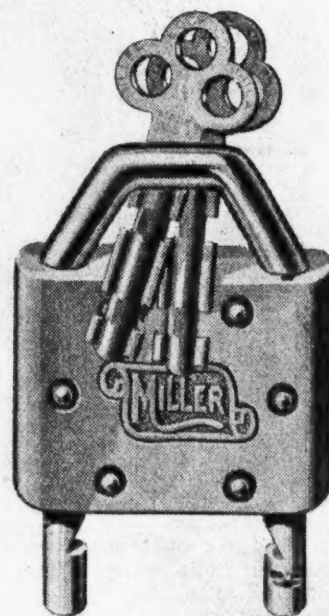
The inside mirrors of the new line are all made of plate glass beveled and double coated with silver. This coating is protected from scratches, moisture, etc., by a special water proof backing. All fittings of both the commercial and passenger car line are rust proofed by

either nickel plating or black enamel egg shell finish.



Miller Ford Tire Lock

Miller locks, manufactured by the Miller Lock Co., Philadelphia, are made in a large number of types and sizes. A recent addition to the line is one designed to be used on the tire carrier on 1924 Ford cars. On this tire carrier it is possible with the conventional lock, to first



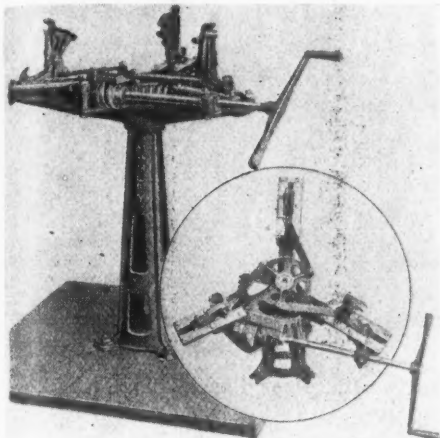
take off the nut which holds the tire clamp, and then twist the clamping piece far enough to get the rim off. The special lock for this purpose however is so close coupled that this is not possible. Other features of the Miller line include rubber and leather covers for the locks to prevent rattling and to exclude dirt. The rubber covers are in the form of rubber bands which conform to the shape of the lock and are also cemented on, to prevent their working up or down.

Manley Tire Changer

The Manley Mfg. Co., York, Pa., has produced a tire changer consisting of three jaws having uniform radial motion

Shop Processes Made Easier by Better Machinery

from the center. Jaws are provided with hooks on the outer ends which grip the rim. When they are moved inwardly the diameter is decreased and the split rim contracted. By reversing the motion the inside of the rim is pushed outward and the rim locked. The changer is also ap-



plicable for the removal of tires from solid rims, wire wheels or disc wheels.

The weight of the machine as furnished for split rims is 210 lbs. Prices range from \$50 to \$65 and the attachment for split and solid rims lists for \$15 extra.

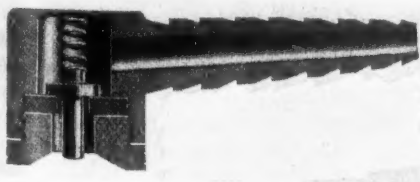
There was also on exhibition at the Manley booth a new cleaning and grease gun designed for draining, cleaning and lubricating transmissions and axles. Literature giving prices and constructional details will be announced later.

Rie Nie Rubber Insulating Tape

There has recently been added to the line of Rie Nie products a rubber insulating tape which although chiefly used in house wiring might in an emergency be used on a motor car. The only case where it would be applicable would be in temporarily patching up high tension wiring, where a crack might have developed which would let the spark jump to the engine instead of jumping at the spark plug. It is manufactured by the Gurkess-Atwood Co., Minneapolis, Minn.

The Rose Air Chuck and Rose Chest Protector for Ford Cars

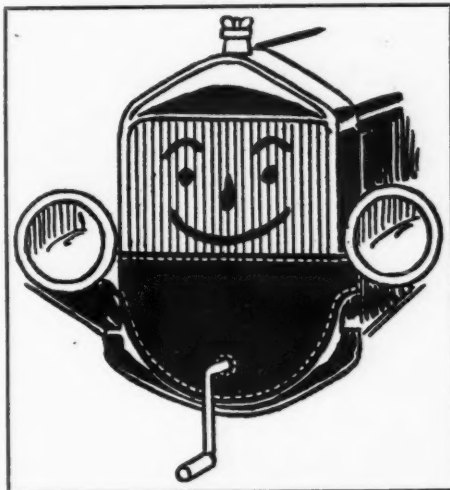
Two new items were featured at the exhibition of the Frank Rose Manufacturing Co., Hastings, Neb. One of these is an air chuck used at the end of



Rose air chuck

the air line for tire inflation. The Rose air chuck is made of solid brass, highly nickel plated and polished. The shank is made in two sizes to fit garage hose. The device is so designed that wear on the washer is reduced to a minimum and when washer replacement is necessary the change is quickly and easily accomplished. The price is \$1.

Another new item being featured is known as the Rose chest protector, this being a radiator cover designed to partially restrict the passage of air through



Rose chest protector

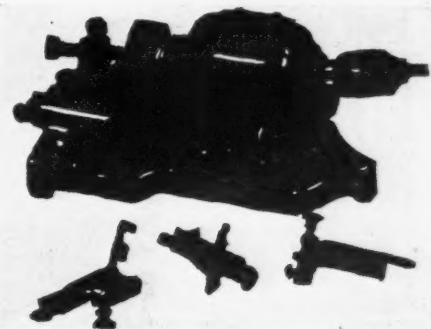
the radiator. As shown in the illustration it covers the lower part of the radiator only where the water is normally the coldest. Attachment is by means of a hole through which the starter crank is slipped and then by means of hooks at the side which are bent around the radiator shell after the hood has been lifted. The device not only covers the lower part of the radiator, but also stops the opening between the radiator and front cross member of the frame, thus keeping cold air from beneath the motor and maintaining the crankcase oil at a higher temperature than would otherwise be possible. This item sells for 75 cents.

New Tools of Albertson & Co., Sioux City, Ia.

A special reamer was shown by Albertson & Co., Sioux City, Ia., for taking off the glazed or crystallized surface on a burned valve seat. This reamer has teeth which bite in where a smooth cutting edge would not take hold. The teeth are staggered, so that a smooth surface is obtained, although the roughing reamer should be followed by a cut with the regular type for best results. The roughing reamer is started by pressing firmly on the reamer handle and turning the reamer back and forth if necessary until it takes hold. Then one or more com-

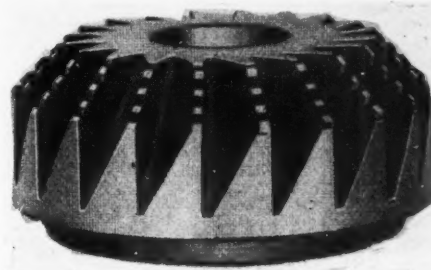
plete turns will take off the rough surface. The price is 50 cents more than standard reamer of the same size.

Another device which fills a definite need in the electrical department is a



Grinder for holding ignition contact points

grinder with attachments for holding various ignition contact points and arms. Electricians who have tried honing or filing ignition contacts know how difficult it is to get a surface that will cause the



Albertson reamer

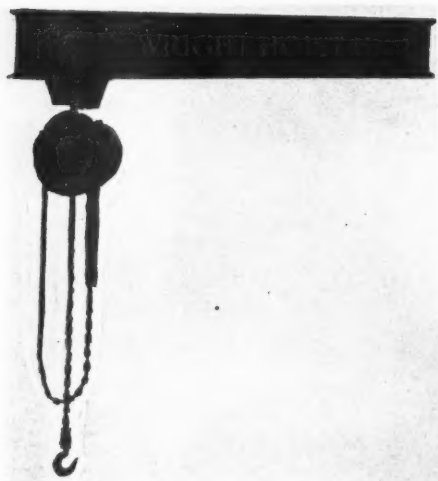
points to meet squarely. With this device the ignition lever which carries the moving contact may be held in any position due to the clamping device which makes shifting of the adapters possible. The wheels then puts a true surface on the contact. The price is 50 cents, including four adapters, diamond point, electric motor, extension cord and plug.

Johnson Generator & Starter Bushings

An addition to the line of finished bushings for replacement on generator and starting motors made by the Johnson Bronze Co., New Castle, Pa. A complete replacement directory giving stock numbers, dimensions and prices for all electrical systems is being furnished to the trade. Prices range from 40 cents to \$1.65.

A line of replacement bushings to cover the requirements of valve rocker arm bushings, camshaft, water pump, transmission, brake cross shaft, etc., is also made. A complete replacement data sheet covering dimensions, stock numbers and prices for all American automotive units is furnished.

Show Products of Sturdy Design



Wright Hoist Unit

Wright Mfg. Co., Lisbon, O., is featuring a hoisting unit which is not just a chain hoist, but also includes the I beam track with all necessary brackets and hangers for mounting the unit in place. The length of I beam recommended for average use is 15 ft., and complete with high grade hoist and accessories, the 1-ton unit sells for \$100. The ½-ton unit is \$80, the 1½-ton unit is \$132 and the 2-ton unit \$160. With a hoisting rig of this sort much time and energy can be saved; for example on bearing work, the whole end of the car may be hoisted so that the mechanic can work comfortably, instead of in a cramped position on his back under the car. Many other applications will suggest themselves to the able mechanic.

Warren Replacement Clutch Disks

Warren Gear Products Co., Warren, Pa., showed replacement clutch driving and driven discs, now furnished by this firm for installation on all plate type

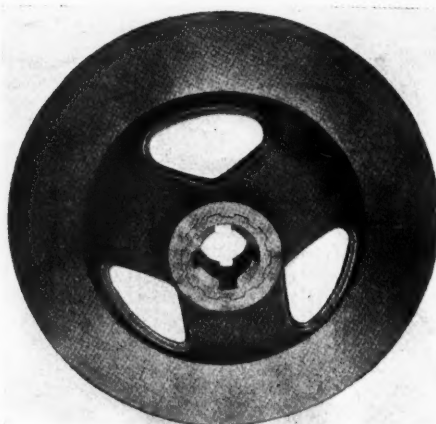


Warren Silent Timing Gear

clutches. The company has issued a replacement directory giving the clutch disc data for practically all American built passenger and commercial cars. The discs

are factory duplicates. Prices are: 8-in., \$4; 10-in., \$5; 12-in., \$7.

Warren silent timing gears, price \$12.50 to \$16.50, constitute another new line. The gears are made up from moulded Westinghouse Micarta. The camshaft gears are provided with cast iron hubs. The gears are furnished for installation on all makes of truck and passenger car

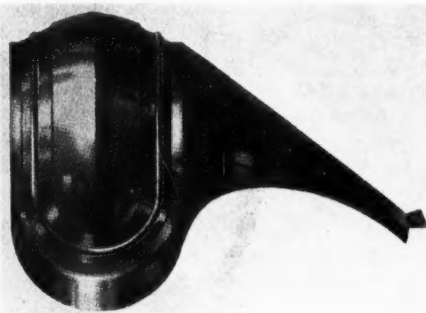


Warren clutch disk

engines. A replacement directory giving the necessary technical data is supplied as a merchandising help for the sale of the timing gear line.

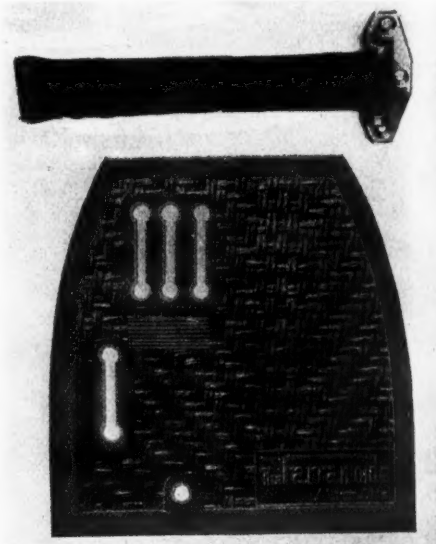
De Luxe Fenders

A high grade type of fender designed for Ford cars is announced by the Corcoran Manufacturing Co., makers of "Peerless" products. This fender is made by a gaint press which required four railroad flat cars to transport it to the factory. Two weeks time was required to set the press up and the total cost amounted to \$50,000. This press is 22 feet high, seven feet wide and weights



65 tons. It is operated by a 40 h.p. motor and is capable of exerting a pressure of 500 tons.

Fenders made on this press have the entire top drawn from one piece of steel, and the fenders are strongly reinforced due to ridges and the arch principle. These fenders retail for \$20 per set. Additional information may be obtained from the Corcoran Manufacturing Co., Dept. 105, Section and Foraker avenues, Norwood, Ohio.



Farran-Old Door Check and Ford Floor Mat

A door check for replacement use was shown by the Farran-Old Co., Akron, O., the strap being made of a fabric material having a high tensile strength. The outer portion of the material is rubber which gives the strap a neat appearance. The strap contains the pin portion of the bracket and is replaceable by unscrewing the bracket. It will be noted that the screw holes are all off center as far as the pin is concerned so that all three screws tend to resist pulling out when an abnormal strain is imposed on the bracket. It sells for \$1.50.

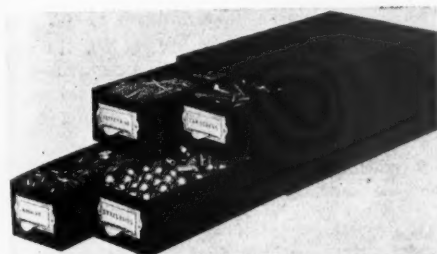
The Ford floor mat is of distinctive appearance with a basket weave effect. The pedal slots are narrow so as to make a close fitting job and reduce drafts to a minimum. A corrugated section just back of the pedals provides a non-slipping heel contact. The price is \$1.75.

The new products of this concern also include a line of radiator hose and hose for garage use in washing cars. The No. 1 car washing hose is constructed of heavy tubing fabric which produces a reinforcement to withstand the strongest water pressure, while the outer surface is corrugated to make it easy to handle. It is supplied in 50-ft. rolls, the list price being 23 cents per ft. in ½ in. size, 27 cents per ft. in ¾ in. size and 28 cents per ft. for the 1 in. size.

Steel Cabinet Supplied With Las-Stik Patches

To conveniently merchandise tube patches the Las-Stik Patch Manufacturing Co., Hamilton, O., is supplying a new steel cabinet which is furnished no charge when six dozen cans of patches are ordered. The cabinet is so designed that additional sections may be added from time to time so that the small shop may in this way build up its parts cabinet as the business grows. In case additional sections are needed to take care

Tools to Interest Shop Men Featured

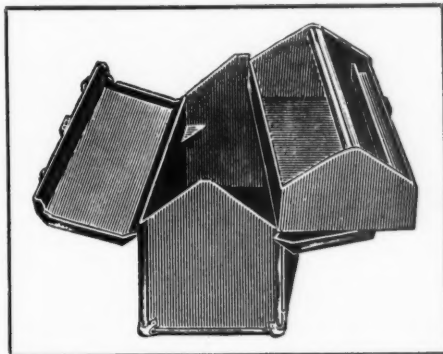


Las-Stick Steel Cabinet

of parts before they can be conveniently obtained due to the sale of patching equipment the cabinets may be obtained for \$5 each.

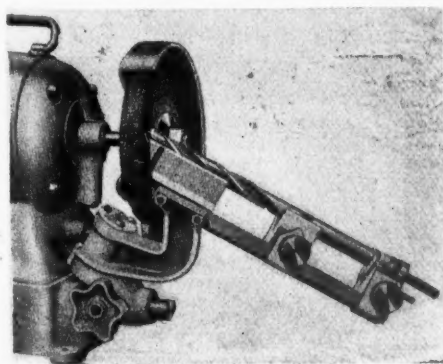
Kennedy Garage Kit

A new style Kennedy garage kit was shown by the Kennedy Mfg. Co., Van Worth, Ohio. The price is \$7.25. It is made of 24 gage steel. The tote tray which is removable from upper part of the kit has a formed handle of round section. It is equipped with Corbin lock, side catches and corner irons. Finished in brown baked enamel.



New Black & Decker Products on Display

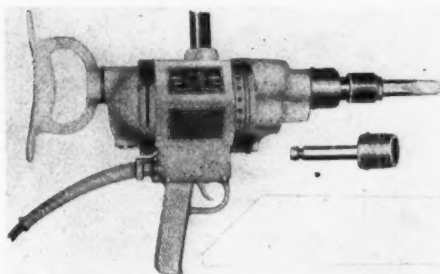
Black & Decker Mfg. Co., Baltimore, Md., had a number of new articles on display at the show, among which was their electric screw driver and socket wrench, priced at \$48. It comes complete with 15 ft. of duplex cable with attachment plug and one each No. 8 and No. 12 screw driver bits with centering sleeves. It is equipped with a positive clutch on spindle which disengages when forward pressure on the tool is relieved. It can



Twist drill grinding attachment

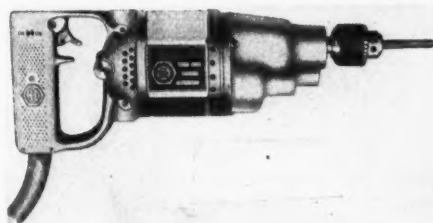
be supplied with a reversing switch which permits it to be used for taking out wood screws, running off nuts, etc., at an extra charge of \$10. The weight of the device is 6 lbs., and the no-load speed is 350 r.p.m. It can be secured geared to give 500, 700 or 1,000 r.p.m. at an extra cost of \$2.50.

Another item is the portable electric tapper complete with three jaw geared



Black & Decker electric screw driver and socket wrench

chuck of $\frac{3}{8}$ in. capacity, with 15 ft. of cable fitted with attachment plug, and selling at \$78. The mechanism is so designed that the tap chuck automatically reverses and backs the tap out of the hole



Portable electric tapper

when operator gives a backward pull on the machine. No reversing switch is needed.

The No. 2 tapper illustrated will handle a $\frac{3}{8}$ in. tap in cast iron, $\frac{1}{4}$ in. in steel, and $\frac{5}{8}$ in. in brass or aluminum. The no-load speed is 350 r.p.m. The net weight is 8 $\frac{3}{4}$ lbs. Special speed of 500 r.p.m. can be supplied at an extra cost of \$5. Machine operates on direct or alternating current and is supplied for all voltages.

A twist drill grinding attachment also was displayed. The price is \$20 to \$36. By means of this attachment straight shank and taper shank, twist drills from $\frac{1}{8}$ in. to $\frac{5}{8}$ in. may be ground. It is equipped with micrometer screw feed and no adjustments are necessary for grinding different diameter twist drills. The attachment is built for installation on the 6 in. Black & Decker bench grinder and the 8 in. electric pedestal grinder. The price of the attachment to fit the 8 in. grinder is \$36.

No. 3 and No. 4 Black & Decker electric screw driver and socket wrenches also were shown. Prices are: No. 3, \$88; No. 4, \$108.

The No. 3 and No. 4 machines are similar to the No. 1 but are designed for

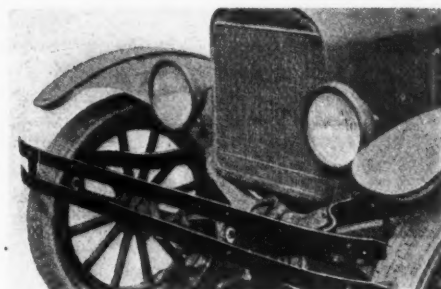
heavier work such as driving lag screws, very large wood screws, setting studs and for heavy production work generally. The automatic disengaging clutch same as used on the No. 1 \$48 machine is incorporated in these two models.

The net weight of the No. 3 is 15 lbs.; net weight of the No. 4, 25 lbs. The regular no-load speed is 350 r.p.m. for both models. Special speeds of 500 or 700 r.p.m. are available at \$2.50 extra.

Octagon Bumper

A spring steel oil tempered bumper designed exclusively for attachment to the model T Ford is made by American Auto Parts Co., Detroit, Mich. Attachment is accomplished without drilling holes. The front bumper illustrated sells for \$7.50 in standard black enamel finish and for \$10 in nickel finish.

A bumper of similar design listed as No. 399-625 is made for attachment to the



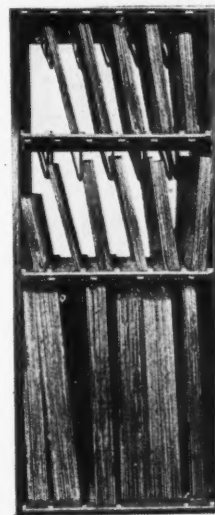
rear of the car. The prices for the rear bumper are \$8.50 and \$11 for black enamel and nickel finish respectively.

The blades are made of 1 $\frac{3}{4}$ in. No. 3 steel. Mounting bracket 2 in. wide $\frac{1}{2}$ in. thick steel. Weight of the front bumper 34 lbs., rear 41 lbs.

Lupton Glass Storage Unit

David Lupton's Sons Co., Philadelphia, Pa., have a new storage unit built to handle Ford windshield and body glass. It has a capacity of 270 pieces with compartments holding from 20 to 60 pieces of the various glass sizes. Approximately

15 per cent surplus of space is provided for additional sizes that may be used on the Ford in the future. The unit is 7 ft. 4 in. high and 3 ft. wide, 2 ft. deep. It is open both back and front. Spaces for windshield glass are 1 ft. deep and those for door and window glasses 2 ft. deep. Shipped completely assembled and weighs 320 lbs. The price is \$45.



Practical Things Featured at Big Show



Walden-Worcester Drain Plug Service Set

To meet the need of gasoline service stations, oil and greasing stations and similar establishments where crankcases, transmissions and differential housing are drained and refilled, Walden-Worcester, Inc., Worcester, Mass., have brought out a complete socket wrench set. Where no charge is made for the labor and the profit on the oil and grease must more than offset the labor it is essential to cut the time as much as possible. A set of sockets capable of quickly and effectively removing any type of oil plug should pay for itself in the time saved. The price of the complete set with sockets and handle is \$8.50.

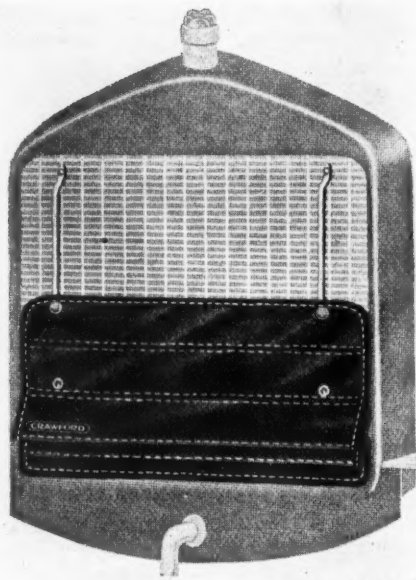
Another new line comprises offset socket wrenches having a specially short handle so that the overall length is approximately 5 in. This makes the wrench adaptable for use where nuts and bolts are partially inaccessible. These wrenches sell for 50 cents each. Another new item is the 4300 series T handle socket wrench having extra depth socket, heat treated for heavy duty work. The wrench has a sliding handle so that it can be used as an L or T wrench as the case may require.

Another new item is a No. 4 connecting rod wrench for Ford cars designed with a swivel handle. This handle can take a position to suit the position of the crankshaft, without disturbing the grip which the socket has on the nut. Other new items include a main bearing swivel wrench, a ratchet wrench, main bearing T handle wrench, flywheel cap screw wrench and double end offset wrench. The speeders are now provided with a ball handle to make them more easily used when operating at an angle.

New Crawford Products

A novel radiator cover was seen at the exhibit of the Crawford Mfg. Co., Richmond, Va., the device including two vertical tracks on the front of the radiator on which the cover slides up and down. On these tracks are snaps to which the fabric cover attaches so that it may be fastened either open or shut or so as to expose half of the radiator surface.

In the open position the fabric folds up in itself much after the fashion of a timetable. The Crawford line also includes tire covers for balloon tires, which it is pointed out, are now so standardized that six or seven different types are sufficient to take care of all needs. Prices



are as follows: Shut-A-Front covers, Ford, \$1.75; Chevrolet, \$2; Overland, \$2; Dodge, \$2.25; others, \$2.50.

No. 2030 Automobile Foot Pump

To the line of automobile foot pumps manufactured by the Norea Mfg. Co. (owned by Chase Co., Waterbury, Conn.) has been added one known as No. 2030. This is made with a strong malleable iron base, the barrel being of polished brass, 1½ in. by 17½ in. A coil spring on the rod inside the barrel serves as a buffer between the plunger and the cap



on the up stroke. Connection to the valve stem is quickly made, either by the regular S. K. connection or with the apex connection shown in the illustration. Pumps come packed 25 to a case.

New Era Pilot Bumper

The New Era Spring Specialty Co., Grand Rapids, Mich., offers a new design of bumper called the Pilot which is intended for installation on light cars. Special arms of new rust proof material and semi-looped ends are the features of design. The two front bars are of 1½ inch width and are bolted at their ends to form



a hinged joint with the shock absorber frame brackets. The same bumper bar is interchangeable front and rear.

The price of Ford, Chevrolet and Overland model in black is \$11 and nickel \$12.50. Price for Overland rear bumper which requires special fittings, \$13 and \$14.50 according to the finish.

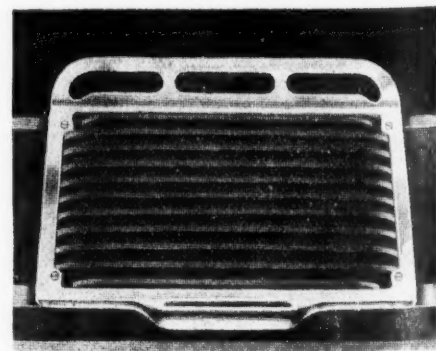
Advance Neutrowound Radio Receiving Set

A radio set of novel appearance and said to have unusual characteristics is being put on the market by the Advance Automobile Accessories Corp., 1721 Prairie Ave., Chicago. The case is made of metal so as to screen the set from interference. The operation is said to be especially good both on local and long distance receiving, and it sells for \$150 without tubes, batteries or accessories.

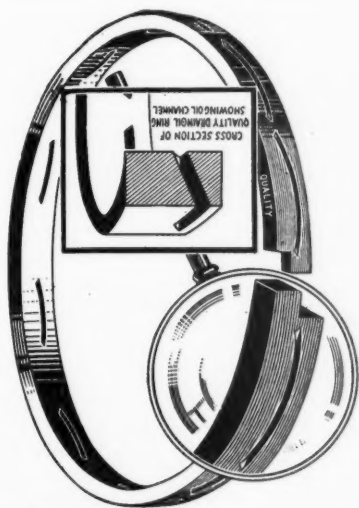


Step Plates of New Design

Two new step plates have been added to the line made by M. L. Oberdorfer Brass Co., Syracuse, N. Y., one of these being intended for small cars, the other for larger ones. The former is 7 in. by 9½ in. while the other is 8½ in. by 12 in. The frame work is of highly polished aluminum while the center is corrugated rubber. Plates come packed two to a carton.



Accessories an Excellent Source of Profit



Drain-Oil Piston Ring

This is a one piece oil control ring designed for installation in the lowest piston ring groove. On downward stroke the scraping edges of oil slots cut excess oil from cylinder walls and force it back to the crankcase through channels formed by slots in face of ring and holes drilled in piston grooves. Furnished in all sizes and standard oversizes, price 50 cents. It is made by the Piston Ring Co., Muskegon, Mich.

The Manley Grease Bucket

This is designed to handle heavy oils and soft greases. Ratchet strokes are used in connection with a rack and pinion to operate the pump plunger. The ratchet leverage is for the purpose of facilitating the drawing in or discharging of heavy grease. The bucket is of a valveless construction having a cylindrical three-way port attached to the bot-



tom of the pump. This is operated by an independent stem brought up through the top of the bucket. The grease bucket can also be used as a syringe to draw the old lubricant out of the differential or transmission box and then force kerosene or gasoline over the gears to clean them. The capacity of the bucket is 25 lbs. and the stroke of the pump is ap-

proximately 12 in. A pound of grease is sucked in and discharged by one stroke. The price complete with hose and nozzle is \$15. It is made by the Manley Mfg. Co., York, Pa.

Display Board For Vellumoid Oil Pan Gasket

For conveniently stocking and merchandising oil pan gaskets the Vellumoid Co. of Boston, Mass., has a new display board which stocks 25 sets of gaskets. It contains 50 gaskets No. 33 for Chevrolet, two being used on each job, also 50 No. 64 gaskets for Overland; also 25 No. 43 and 25 No. 44 for Dodge Brothers cars. These gaskets also come in boxes of 10, the box being marked with the gasket number, also the part number which will show on the manufacturer's list and each gasket itself is marked, so that if one gets out of the box, it can be

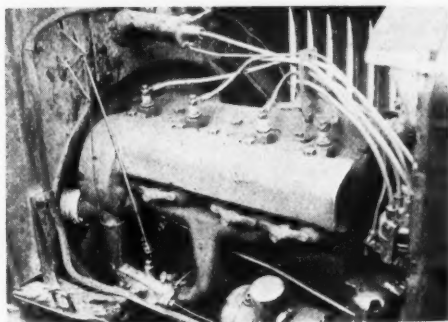


readily identified. The price with 25 sets for Chevrolet, Dodge and Overland is \$22.

An addition to the Vellumoid line is seen in Vellumoid gear cover gaskets which are now available as well as the oil pan gaskets. These are also individually marked with the stock number and come in standard packages containing 10 gaskets or 10 sets, in cases where motors require two gaskets for each gear cover. Prices on gear cover gaskets vary from \$5 to \$84 per hundred, depending on the simplicity or complication of the gasket shape. Detail price list covering various cars may be obtained from the manufacturers.

Monroe Car Heater

This is a direct radiation type of heater. The heater unit is of cast iron and is supported by the cylinder head cap screws. An integral extension of the casting forms a warm air inlet for the

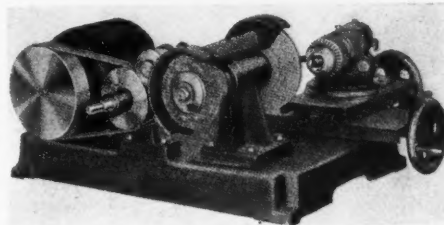


carburetor. The engine cooling fan circulates the heated air through the warm chamber and into the front compartment of the car to a circular shaped adjustable register. The register is fastened to the

center front floor and is provided with a neat appearing cast escutcheon. The model illustrated is for installation to Ford engine, but additional models to fit other cars will be announced later. The heater is made by the Monroe Auto Equipment Co., Monroe, Mich.

The Super Franklin Valve Grinder

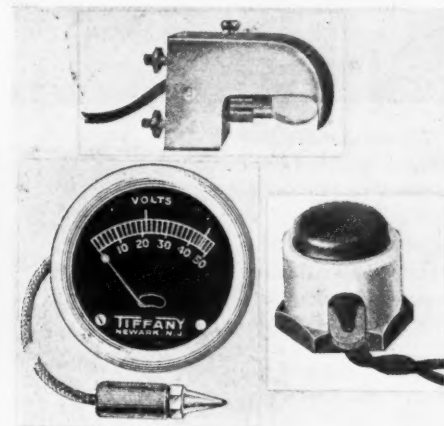
Van Norman Machine Tool Co., Springfield, Mass., announce an improved model of the original Franklin valve grinder. It embraces several new features making it more diversible for service station re-



quirements. Universal three-jaw chuck with split collet as optional equipment, a wire brush valve carbon cleaning attachment and "V" block for valve testing. The regular line of piston and valve grinding machines including the Franklin model B will be retained.



Kales ash receiver, described in the Nov. 20 issue of MOTOR AGE



Tiffany dash lamp, horn button and voltmeter, described in the Nov. 20 issue of MOTOR AGE

MOTOR AGE'S PICTURE PAGES



❧ ❧ ❧

A striking fall display in the salesroom of M. B. Leahy, Inc., Durant and Star distributor at Rochester, N. Y., arranged by George A. Brower, general manager, and J. H. Heckathorn, sales manager. Great quantities of leaves, ferns and tree limbs were used. Note the pail beside the water hole. The water effect was obtained with a large mirror placed on the floor and covered over with dirt and leaves. The car on display is a Durant sport touring model

❧ ❧ ❧



This rain scene was staged by the retail branch of the Studebaker Corp. of America, at Cleveland, O., to demonstrate the new Big Six Duplex-Phaeton. A young lady inside the car operated the roller enclosures and with eight movements of the hand transformed the Duplex from an open to an enclosed car



One of the buses, used in the first unified trolley and motor bus system adopted in Illinois at Decatur. The vehicle shown in the picture is a Mack. The inauguration of this service represents another step forward in the development of the motor bus as a factor in interurban transportation



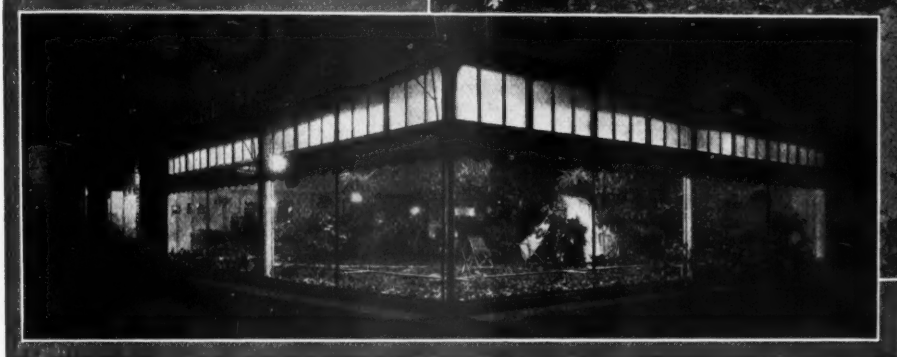
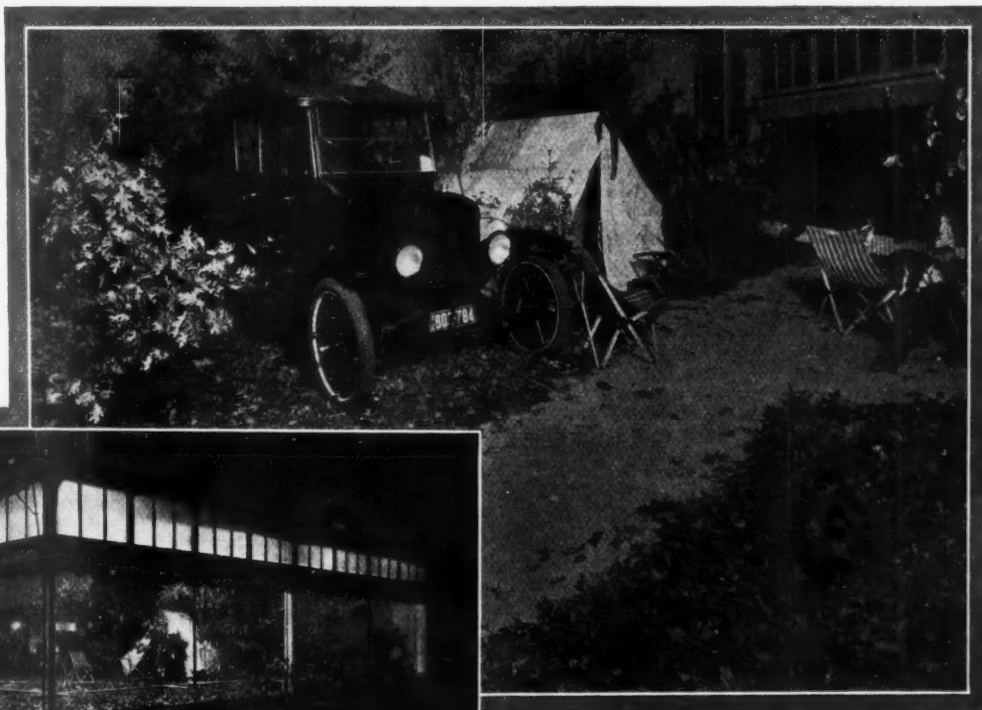
This unusual night photograph of the new home of the Finley Co., Spokane, Wash., shows the lighting effect both inside and outside the building. Note the detail in the inside. The salesroom floor is covered with small tile alternating gray and grayish green. The stairway leads from the salesroom floor to the mezzanine on which the offices of the company are located. To the rear of the salesroom is the modern new service station

the detail in the inside. The salesroom floor is covered with small tile alternating gray and grayish green. The stairway leads from the salesroom floor to the mezzanine on which the offices of the company are located. To the rear of the salesroom is the modern new service station

OF AUTOMOTIVE INTEREST

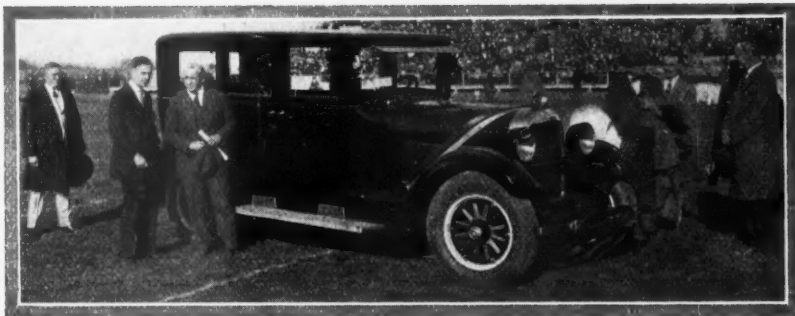


Rimes-Lee Motor Co., Indiana Harbor, Ind., Ford dealers, devised this attractive window display emphasizing the importance of the part played by the automobile in the camper's life. It was a good stunt and attracted considerable attention



The Procter & Gamble Co. use this Dodge Brothers car as a method of outdoor advertising as well as a means of distribution. It is a business model equipped with a new panel body

Knute K. Rockne (third from left), famous coach of the Notre Dame football team, with the new Sedan presented to him by the Notre Dame alumni just before the big homecoming game recently played with Georgia Tech.



The luminous glove is a new aid to safeguard automobilists at night. Carolyn Whitney, screen star, has had her chauffeur wear these gloves while driving at night. The glove is covered with a cloth prepared with phosphorous treatment and is clearly visible in the dark



The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

Data on the Essex Six

Q.—Give me the correct valve timing of the 1924 Essex six and how much speed should they have when they are timed right?—Bell's Garage, Boothby Harbor, Maine.

The inlet opens 7 degrees after top dead center and closes 50 degrees after bottom dead center. Exhaust opens 55 degrees before dead center and closes 8 degrees after top center. The inlet valve tappet clearance should have from .002 to .003 inch and the exhaust from .004 to .005 inch when the engine is hot. When in perfect condition the early Essex sixes on an average would show between 52 and 55 miles per hour.

2.—We are having trouble with a 1917 Hupmobile Model N. There are two ignition systems on the car and eight spark plugs. The original Atwater-Kent and a Bosch magneto Model NU 4. Both of the systems seem to be perfect. We have checked up on them carefully for trouble of all kinds and there are new plugs in both systems, but she will not hit at high speed. She is good for about 40 miles per hour and then she goes to pieces and if you slow up she will take hold and hit o. k. again, until you get up speed again. We have ground the valves, cleaned the carbon, cleaned the carbureter and the feed line. It has a 105 jet in the carbureter and we tried a 115 jet, but it failed to help. This car should turn up 60 miles per hour and not miss a stroke as she did up to the time she took this skipping.

The following is a list of things that could cause the trouble you mentioned: Plug gaps too wide, interrupter gap too great, interrupter spring weak, interrupter arm sticking, valve springs too weak, causing sticking valves or floating of the valves. You have not mentioned whether or not you checked the valve and ignition timing, and we are of the opinion that a very probable cause of the trouble is a timing chain that has slipped, allowing the valve timing to become deranged. It might be advisable also to check the timing and synchronization of the individual ignition systems. It must be borne in mind that the leverage or crank ratio of the battery ignition system should be different from that of the magneto ignition system, as the interrupter of the magneto travels double the speed of the interrupter of the battery ignition system. Our two prominent suggestions as

to the cause of the trouble is slipping chain or weak valve springs with the third best being that the spark plugs are not suited for the engine, causing pre-ignition. In this respect we would suggest that you secure plugs of the aviation type designed especially for high compression and having very short center electrodes. We are interested in the outcome of our suggestions and would appreciate hearing from you.

TIRE WEARS ON OUTER EDGE

Q.—I would like your advise regarding a right front tire of a Ford Sedan equipped with full sized balloons. The tire seems to wear on the outer edge and seems to be out of line. The wheels have been lined different from those with 30 by 3½ tires being now about 1/16 inch closer in front. Both wheels are set at the same vertical angle and left tire shows no wear.—F. C. Bartels, 455 W. Packard street, Decatur, Ill.

An answer to your question will be found in the August 28th, 1924, issue of MOTOR AGE under the heading "Tilting Top of Axle Backwards Gives Castor Effect to Front Wheels."

CLEARING HOUSE INDEX

(For use of readers who keep a file of MOTOR AGE issues.)

Issue of Nov. 27, 1924

Meaning of Numerals

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This Generator Howls

Q.—We have a Westinghouse generator which makes a howling noise until motor gets warm. Generator seems to get too hot. If third brush is lifted it will stop. What would you suggest as its cause.—Painters Garage, Darlington, Indiana.

The howling without doubt is caused from too high an output from the generator, which produces a noise originating from the generator itself or a mechanical noise due to the load imparted on the mechanical parts of the device. To reduce the output it is necessary to loosen the third brush anchoring device and move the third brush slightly against the direction of rotation of the armature. You have not informed us the type of generator or the car on which it was installed and we are therefore unable to give you any figure as to the normal maximum output. If reduction of the charging rate does not eliminate the noise it would be well to remove the generator, disassemble it and carefully examine the field coil units to see that they are clean and securely fastened to the generator frame.

WHAT TO DO TO GET RID OF SHIMMY IN FRONT WHEELS

Q.—Will you please inform us as to what to do to get rid of the shimmy in the front wheels of a Ford. This car is almost new and is equipped with semi-balloon tires, size 29 by 4 and unless every nut and bolt in front axle assembly is pulled up tight this car shimmies so bad as to make it dangerous to drive. Will it be necessary to make any change in the steering gear to eliminate this trouble.—Seitz Battery & Electric Company, 225 W. 6th street, East Liverpool, Ohio.

It will be necessary to have all of the front system parts fairly tight, and unless the king bolts or spindle body bolts, bushings and spindle arm bushings are a good fit it will be difficult to eliminate the shimmy. We would suggest that you bring the system up to meet the specifications to which all Ford front axles are built. This information was printed in the August 28th, 1924, issue of MOTOR AGE under the heading, Tilting Top of Axle Backwards Give Castor Effect to Front Wheels.

The Readers' Clearing House

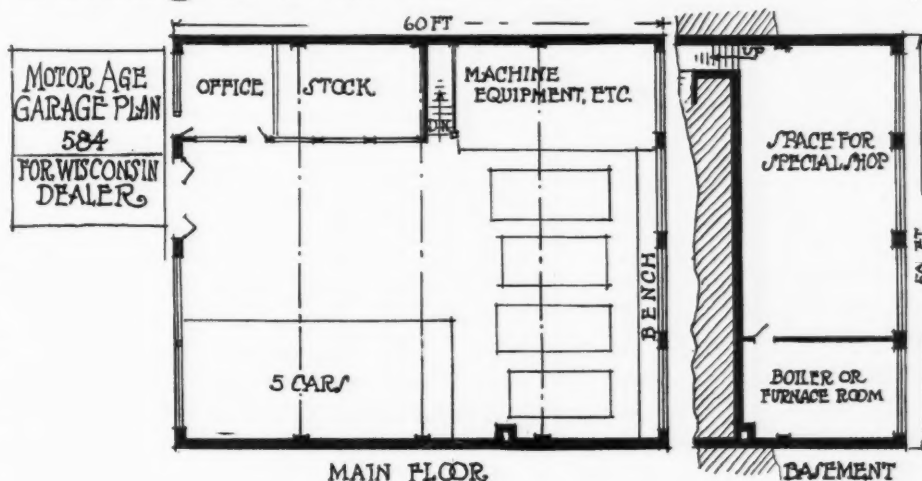
Where Building Is to Be on a Hill

Q.—I have been a subscriber for the MOTOR AGE for four years and will be again if you will do me a favor. I want a plan for a garage 60 feet long by 50 feet. 20 feet of the back by the full width will have to be basement. As the building spot is a hill and it slopes back I think it will be cheaper to have a basement than to fill this up. Send the plans direct to me as I will send them to Madison. And please tell me which will be the best to build, tile, cement or solid concrete. I don't want any showroom and would like to have stockroom and office in one with a small railing to divide stockroom or I will leave it for you to decide.

As the town I intend to build in is about 300 or 400 population, I will also leave the size of the building to you, if you think 50 feet is too wide. Kindly send plans as soon as possible direct to me.—Wisconsin Dealer.

There is probably no method of reaching the lower floor of your proposed garage with cars otherwise we would advise you to make it larger than 20 by 50 feet. This space however, can be used very advantageously for radiator repair, battery work or any other side line which you have not room to handle on the main floor.

One end we have partitioned off for a furnace room and if it is used in this way some means will have to be provided



for getting coal to the furnace. A good scheme would be to excavate and provide an additional room in front of the furnace room which would be filled through a trap door in the upper floor.

If the location of the lot will permit, we would advise windows along the side next to the space marked for the machine equipment, although if this is not possible skylights would be perfectly all right.

We would not change the proportions

of the building believing that they are very well adapted for the use you intend to put it. There is space for the storage of several cars waiting to be worked upon and also working space enough to keep several men busy. There is practically no waste space and it should work out nicely. We have shown the roof supported on three 50 foot trusses and believe this method is the best because it will leave your floor free of posts.

Architectural Service

IN giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

Retain Possession of Car, Says Attorney

Q.—December 15, 1922, we were called out to tow in a Dodge touring that had rear end trouble with instructions from the driver, who was the owner's son, to fix it up. We took it apart and ordered the parts, and when they came, the son of the owner helped put it together. The bill was \$50.29 and the son said the father would be in in a few days to get it, but up to the present date has not been after it. There was an account of \$2.25 against the car for work and parts previously done, and storage from December 15, 1922, until the present date at the rate of \$2 per month, making a total of \$93.34 to date. Storage for the months of December, January and February are not charged. I have asked the owner repeatedly to get the car and pay the bill, and he has said each and every time that he would be in in a few days and get it and straighten up the bill.

Now, what I want to know is, what is the procedure of disposing of the car in order to get the bill that is against it? I have no signed order for the bill by him; he has never objected to the bill, but simply fails to get it, and as I feel that two years is ample time for anyone, I am going to take steps to dispose of same.

Kindly give me the information covering this case, and the procedure.—A Reader.

Missouri gives a lien for storing, material and labor furnished on vehicle. Now, this is a lien of possession and requires garage keeper to keep possession to sustain his lien. The lien for storage is unquestioned, but the lien for repairs requires that the garage-keeper obtain a written memorandum of the work or material furnished, signed by the owner of the vehicle. Where this is complied with, the repairman is given a lien for the amount stated in the written memorandum. Still, I am of opinion that the repairman would be entitled to a lien for reasonable charges even though he does not have the written memorandum.

Now you may dispose of all possibility of doubt by retaining possession of the car, and thus preserving your lien intact, while at the same time bringing suit for the amounts due, and securing judgment, then levying on the judgment. Should there be no claimants, as mort-

gagers claiming prior rights to the judgment, then they would have to show that they were also prior to your lien rights. If no intervening claimants, then your judgment settles all disputes.

Now, if you desired to proceed under your lien claims for storage and repairs, you can do so by complying with Section 7251, Revised Statutes of Missouri, 1919. You can do this by filing a statement duly verified with a justice of the peace in the ward, district or township, where you reside, setting forth the account and description of the property on which the lien is claimed, and the justice will issue a summons as in other civil cases, and set the case for hearing and on the day set the claim will be tried as any ordinary case in a justice court. If you are given judgment, the justice will order the property sold to satisfy your claim and the court costs.

A signed order is not necessary to establish your claim. The owner's actions and promises are admissions against him.

The Readers' Clearing House

Tappet Clearance Reduced From Manufacturer's Recommendation

Q.—I notice in your valve timing and recommended tappet clearance chart of June 26th, 1924, that the recommended tappet clearance on a number of cars is .010 in., this clearance being recommended by the factory. Now I am not saying that this clearance is too much or not right, but here is where we would like to have some help. When we stick to this clearance the motor runs fine, but is so noisy that the owner is disgusted with the job, so what are we garage men going to tell them. I have been expecting someone to ask this question, but have failed to see it.—L. B. Draper, 7220 Nagle avenue, Detroit, Mich.

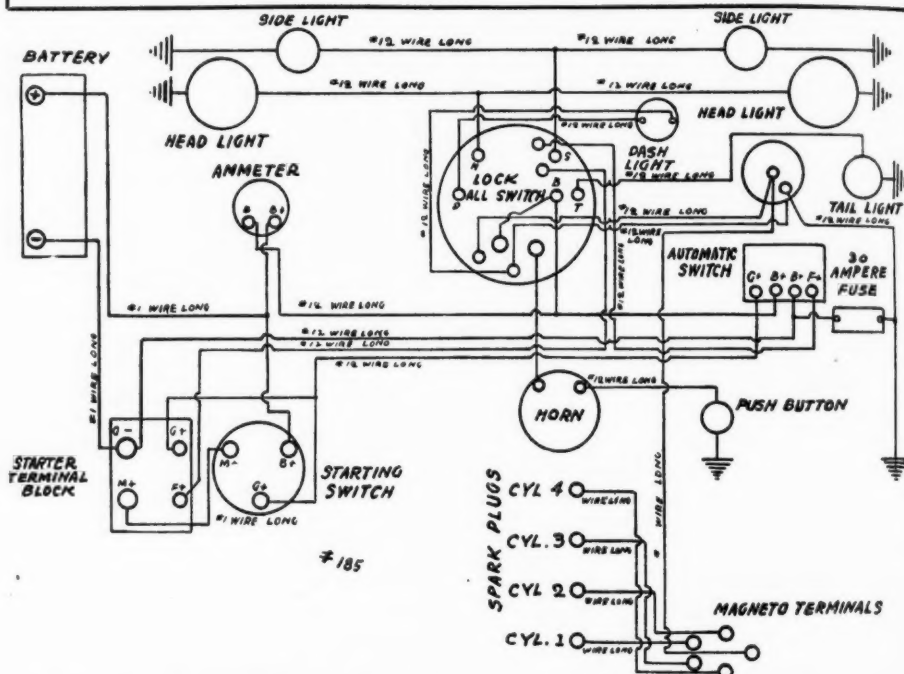
While the power may be slightly affected, there will be no harm result if the tappet clearance is reduced from the recommended amount, provided the expansion when the engine is hot does not reduce the clearance entirely and hold the valves open. If this happens, the valves will burn and will have to be replaced. We recently observed a case where the owner of a car insisted on having the engine very quiet. To accomplish this, the service station cut down the tappet clearance to a point where there was danger of the valves being held open and burning. The owner of the car then took a trip, on which the engine got hot enough to cause just this occurrence. Then, after he found that it required a new set of valves put in, he was content to operate the engine with a little more noise. This procedure is, of course, undesirable and is not to be recommended, for it is likely to result in the loss of a customer. The only thing the garage man can do is to use his best judgment and, if possible, make the adjustment when the engine is quite hot, so that he is sure there is some clearance left. If this is done the factory recommendation can be doubtless deviated from to some extent and a more quiet engine obtained without any harmful consequences.

PUTTING TRACTION ON ONE WHEEL

Q.—I have an Overland touring 4, 1924 model. I would like to attach some kind of pulley on one rear wheel to enable me to pull myself out of a mud hole in case I get stuck. I'd use ropes and possibly a tackle block hitching the other end of the rope to a tree or post. The thing that puzzles me is how I can get all the traction to the wheel where the pulley is on. Would a simple tying up of the other wheel put all the pulling power on the wheel where pulley is attached? I have a pulley which I can fit to either rear wheel but I am afraid to try it for fear of tearing the rear end to pieces.—T. H. Barkow, 1614 6th street, Wausau, Wisconsin.

To put all the traction on one wheel it is only necessary to tie the opposite wheel with, say, a ½ inch rope. The pulley should be as small as possible so as to get as low a reduction as needed, and at the same time it must be kept in

Wiring of U. S. L. on 1915 Mercer



Q.—I have been a reader of Motor Age for a number of years and I am more than pleased with it. I have secured a lot of help from it. This time I call on you for help in regards to wiring a Mercer 1915 U. S. L. system. I would like to have you send me a wiring chart which type is model E-177.—Andrew H. Norich, 1128 Elizabeth street, Kenosha, Wis.

The diagram covering the wiring of the

units on the car but not including internal circuits of the generator and starter is shown at Fig. 185. The internal circuits of the motor generator were printed in Fig. 101069 in the November 15th, 1923, issue of MOTOR AGE. If you desire these internal circuit diagrams we can supply same at your request.

mind that one rear wheel will travel twice as fast as normally, due to the fact that the other one is tied up.

REMEDY FOR OIL LEAKAGE

Q.—I have been working on an Oakland 6 1919 that leaks oil past rear bearing when going up hill. Have tightened bearings and know that the oil groove and return are clear. What would you advise?—Ralph W. Gettle, Green Mountains, Iowa.

We would suggest that you remove the engine and refit the upper half of the rear main bearing bushing. It is necessary to have at least 90 per cent contact on both halves in order to provide an oil seal.

Q.—Also have a Ford that knocks at a certain speed with the spark advanced. Retarding the spark will stop the knock, and also shorting No. 3 plug the knock almost stops.

We would guess this to be due to a ring knock or loose piston pin. If concentric type rings were used, the ring knock is very probable, as we know of several cases in the past year and a half where a great many garage men complained of a hard-to-find knock in Ford engines which eventually was traced to concentric piston rings or rings that were too closely fitted in their grooves.

One method sometimes successful for the correction of this trouble is to file notches on the top of the top piston ring where it fits into the groove. Another cure is to install regular Ford rings.

Q.—I have burnt in the main bearings and put in new pistons and camshaft and cam gears since the knock started also new connecting rod in No. 3.

Refer to answer to question two.

Q.—I installed new rings in Studebaker four. The car had run about 400 miles since and has a knock like a carbon knock so I burnt the carbon out and ground the valves but this did not stop the knock.

We are inclined to believe that this is a compression knock due to the fact that you have increased the compression by the installation of new rings. To eliminate this knock we would suggest that you first remove the top water header. When this is removed it will give access to a large plug directly over the combustion chamber of each cylinder. Remove these plugs and grind off the sharp point on their ends and then reassemble. If the knock is still present take out all the valve port plugs, chuck them in a lathe and remove about 1/32 of an inch from the bottom in order to increase the compression space and decrease the compression pressure.

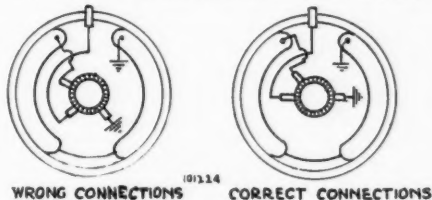
The Readers' Clearing House

Main Brushes Should Be Opposite Each Other

Q.—I am sending you a diagram of a Remy generator that failed to generate and still refuses to. This generator is from a Superior Chevrolet and is model 950-A. We have installed new brushes and sanded them in very carefully. We had the commutator turned down in a lathe and tested the armature for shorts and open coils with growler and test lamp and it is O. K. We also tested the brushes and fields and they are all right, and still it refuses to generate and the field coils are not reversed as we loosened one and passed current through them and they attract each other. This generator never did operate as it should. By this we mean that moving the third brush did not change the charging rate. We have tested the cutout and ammeter and wiring on the car and they are all right. We reversed the field connections for armature wound wrong and still it will not charge. This generator will not motorize when connected to a battery. Please look over the diagram as I am sending this sketch to show how the generator is connected. The commutator has 28 segments and the armature is wound single re-entrant and is also lap wound.—Vernon O. Westcope, Mt. Etna, Iowa.

We are reproducing your sketch alongside of one that we have made which has been copied from a wiring manual. The sketch at the left is yours and the one at the right is ours. We are not sure that you have accurately copied the connections of the generator, but if you have done so, it would appear as if you have a four pole rocker ring installed in a two pole generator. In a two pole machine there is one north pole and one south pole. Accordingly, in the armature the voltage generated is such that on the commutator there is one positive point and one negative point. Accordingly, only two brushes are required as far as main brushes are concerned and they must be opposite each other. You will notice that the two main brushes you have shown are at 90 degrees, which would be correct for a four pole machine. It is possible that the machine has been repaired by some other shop and someone unfamiliar with electrical generators has made the mistake of installing four pole brush rigging in this two pole generator. On the other hand it is possible that your sketch is not exactly accurate and that you have reversed the connections of the third brush and the insulated main brush. The first thing to do is to see that your connections are made, as shown in the right hand sketch. The next thing to do would be to lift the third brush and apply battery current to the insulated terminal and the frame of the machine and see that the armature draws from 15 to 20 amperes and has no appreciable tendency to turn in either direction. The next thing to do would be to drop the third brush and see that the machine rotates in the same direction that it would be driven if installed on the car. If you test the two field coils you should find that they draw 1.7 amperes when connected to a six volt bat-

tery. When the machine is running as a motor with the third brush touching the commutator the machine should draw 2.7 amperes at 6 volts. You mention having tested the armature with a growler and a test light. The test lamp if connected on 110 volts is suitable for testing for ground only, the two points being put on the armature shaft and commutator, respectively. A very good check on the armature, however, can be made by running as a motor. If the armature is shorted or grounded the rotation will be uneven and if the generator is laid on a bench while operating as a motor it will show considerable shake and vibration. The current also will be unsteady and if measured with an ammeter will make the needle of the ammeter vibrate back and forth. Usually if the field current seems to be about right and the machine will run in the right direction as a motor but does not generate when driven faster in the same direction, it indicates armature trouble.



If the machine runs in the wrong direction it requires reversing the field connections. This does not mean reversing the third brush and the main brush connection but it means to ground the lead from the field which formerly went to the third brush and to connect the field lead which was formerly grounded to the third brush. It may be that you have a reverse wound armature and in trying to correct the condition by reversing the field circuit you really interchanged the leads on the brushes by mistake.

REMEDY IS TO BRING SUIT

Q.—What action can be taken in a case where a car is sold on the time payment plan, the usual payment having been made perhaps two 3-month payments, after which time the purchaser decides to turn the car back and make no further payments. In most cases of this kind the purchaser possesses no property to levy on. What can be done in a case of the above? In regard to holding cars for repair bills, storage, etc., what steps are necessary along these lines.

Since you get the property back and have received payments you should bring suit for damages for breach of contract. You will get a judgment for whatever damage you show. This judgment is good for a period of years, and may be collected upon at any time the debtor has property or a good salary, etc.

It appears that your state does not give you a statutory lien for repairs and storage, and therefore there is no formality to the holding of a repaired car. You might bring suit for the bill, holding the car meanwhile, and with the judgment levy upon the repaired car, etc.

How to Check Distributer Timing

Q.—I have a Bosch DU-4 type high tension magneto that I can't understand. I retard the spark and set the points with the armature and get a good spark. I have advanced the spark and set the points with the armature and have a good spark but if I move the spark in retard $\frac{1}{2}$ inch I have no spark. Now if you can give me any information in regard to this, I will thank you in advance.—A. H. Williams, Westside Garage, Encino, N. M.

We are of the opinion that the distributor is incorrectly timed in relation to the armature and interrupter. In order to check the timing proceed as follows: Set the spark lever at full advanced, that is, moved all the way against the direction of rotation of the armature. When the armature advance lever is in this position the top trailing edge of the armature should be just leaving the pole shoe of the magneto at the upper right viewed from the front of the magneto. The distance between the trailing edge of the armature and the pole shoe should be not greater than $\frac{1}{16}$ inch. At this time the points should have just started to open and the distributor brush should be just fully on its segment. It is important that brush in the distributor should not have traveled across the segment any great distance, because, if it has, the magneto will deliver a spark in the advance position, but in the retard position the brush will be off the segment and no spark will occur. Now place the interrupter lever in the fully retard position. At this time with the points just opening the distributor brush should have traveled about $\frac{3}{4}$ of the way across the same distributor segment. When you have timed the interrupter and the distributor and get the specifications mentioned the magneto will operate in both the advance and retard position provided it is in good shape otherwise.

DORT WIRING DIAGRAM

Q.—Kindly inform me where I can get wiring diagram for a 1915 Dort. The diagram that I want is one that will show connections from battery to starting switch, also from switch to twelve volt starter generator. I have a file of Motor Age for two years back.—North End Garage, 746 N. Bowman street, Mansfield, Ohio.

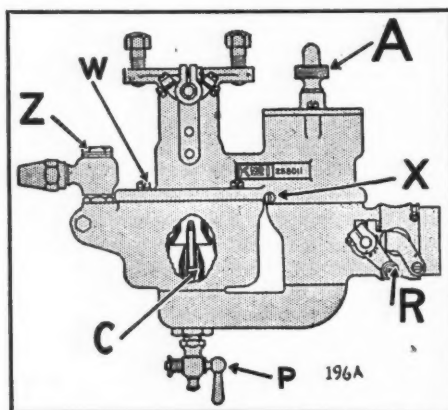
The diagram which you desired was printed in the August 21st issue of Motor Age under the heading Generator Charges Only Half of the Battery. In the issue referred to the diagram is given in answer to a subscriber inquiry on trouble on a Briscoe car and as the system used on the Briscoe is similar to the Dort of 1915 and you may follow the diagram mentioned.

The Readers' Clearing House

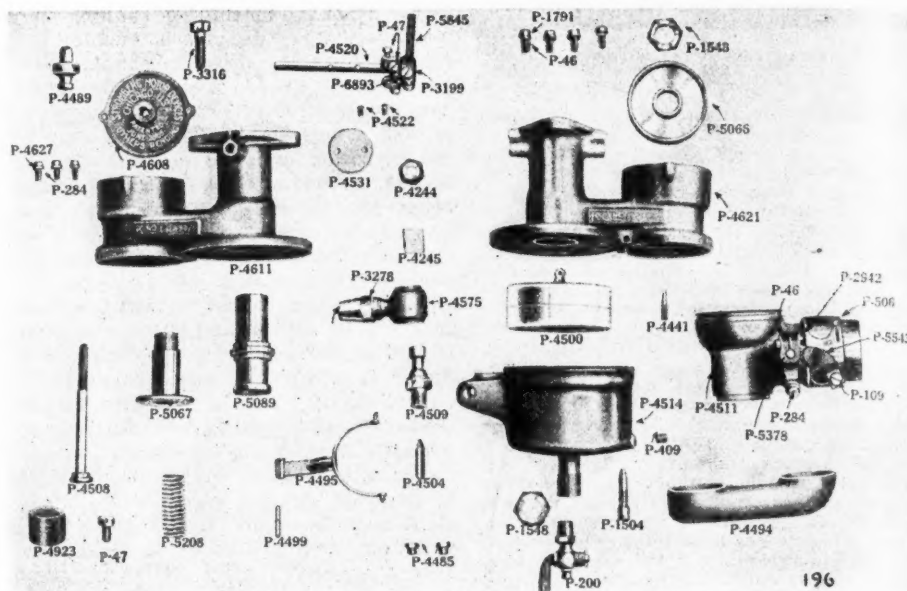
Adjustment of Stromberg Carbureter

Q.—Can you provide me with a cut of the Stromberg K. O. carbureter, a picture showing the parts and directions for adjusting.—An Observing Reader.

We are showing at Fig. 196 the complete carbureter disassembled. Adjustment of this carbureter depends on it having a sufficient quantity of warm air without which it is impossible to get complete vaporization of the gasoline or a smooth running motor. The nut A is the only adjustment on the carbureter at Fig. 196a. The stem of this nut supports the lower end of the spring which controls the air valve. This air valve opens downward into the air chamber. Turning nut A clockwise or down tightens the spring and admits less air, thus producing a richer mixture. Turning A in the opposite direction or anti-clockwise produces a leaner mixture. Before starting the engine turn nut A anti-clockwise until a point is reached where when lifting or pulling up on A a decided click is heard. This is the air valve coming in contact with the seat. Then turn A clockwise or down notch by notch until click is no longer obtained when lifting the nut A as directed above. Then turn two more notches in same direction. The air valve



is now on its seat, which is the normal position when motor is at rest. After the engine has been started and is warmed up turn A up or down notch by notch until motor idles properly. It should not be necessary to turn this more than a few notches either way if carbureter is set as above directed. The nut A is the only adjustment that controls the mixture on low and through intermediate speeds. Rarely will the nozzle need to be changed to get satisfactory low speed adjustment. The correct high speed mixture is furnished automatically and can be changed only by changing the size of nozzle. If mixture at high speed is too lean, so that slightly closing the dash control valve gives a gain of speed a larger nozzle should be substituted. The dash control valve or chocker valve is indicated at I. In this carbureter the nozzle opening gets small-



er as the number gets larger, thus a No. 59 nozzle is smaller than a No. 58.

HOW TO TEST MAGNETO

Q.—We have a 1917 Ford which cannot be started on magneto either warm or cold. It starts instantly on Hot Shot batteries and when once started runs and idles well on the magneto. We had the magneto magnets charged without removing from the car but the condition is not improved. Is it possible that the coils are too far from the magnets?—Y. Kono, Seattle, Wash.

Excessive end play in the crankshaft may cause this trouble for when the emergency brake lever is pulled up it will separate the flywheel magnets from the coils, so that you may be unable to start on magneto.

To test for this condition, you can jack up one rear wheel and block the other wheels of the car so that the car will not come off the jack. Then leave the emergency brake lever down so that the clutch is engaged. You can then crank the engine either by hand or with the starter and then the rear wheel which is jacked up will turn with the engine. The reason for doing this is to allow the crankshaft to take its normal position with the flywheel magnets near the coils.

INDEX

Of Readers' Clearing House

An index of the Readers' Clearing House Department is now a regular feature of *MOTOR AGE*. By intelligent use of this index the subscriber will find that a complete file of *MOTOR AGE* issues as published hereafter will constitute a valuable reference library in which the solution can be found to many of the perplexing problems arising in the maintenance end of the automobile business. This index appears

EVERY WEEK

Now if you find that the engine starts immediately on magneto it will prove that the end play in the crankshaft is the cause of the trouble. We are not inclined to feel that the coils are in bad shape on account of the fact that you state that the engine idles well after it once gets started.

A Come and Go Open Circuit

Q.—In the August 21st issue of *MOTOR AGE* on page 27 we note an article that says, "Turn the Crank and the Starter Works." This article has reference to a 1920 Buick six touring car. We would be very much pleased if you would forward to the questioner the following: The writer had a 1918 Buick six touring car and experienced exactly the same trouble as spoken of in your article. We had the generator taken off five different times and completely overhauled by the Willard Service Station, once without results and three times by various garages and finally we checked over the generator ourselves. We removed the collector ring and found one of the very small wires that ends under the collector ring had loosened up and it moved only a very small fraction of an inch, but this when soldered down put an end to the trouble.—George H. McNeill, N. Muskegon, Mich.

We are very grateful for this experience as above related. We are not certain as to what is meant by the collector ring. On the motor generator the place where the brushes rest is usually called the commutator, while the part which holds the brush assembly is usually known as the brush ring or rocker ring. There is no question, however, but what a wire which has become unsoldered and sometimes touches and makes contact and sometimes does not touch will cause a trouble of this character which is a very difficult thing to locate. Usually the trouble is that when you go to test for the open circuit the broken parts are making contact and test o. k.

EDITORIAL

December

THIS month which brings winter's bite to most of the country also carries with it a cheerful note for the retailer. This is the season when all the country is intent upon the purchase of Christmas gifts. It used to be that advantage was taken of the prevailing spirit by many merchants to unload on generous buyers all sorts of useless articles, but now that utility has come to control the outpourings of the pocketbook we find the demand is almost 100 per cent for those articles of merchandise that will be of service to their recipients.

Thus the day has come for the automotive merchant to profit legitimately and fairly from the business affluence that goes with the Christmas holidays. Automotive merchandise is both useful and handsome and its variety is so great that within its bounds the most fastidious taste or the most frugal purse can be suited.

But the time moves on. The merchant who would profit by the season cannot lag. The special appeal that rules now will grow stronger and stronger for a week or two and then it will drop away as if the earth had swallowed it up. There are profit possibilities in Christmas merchandising, but they will not wait. The dealer who expects to take advantage of them should hasten now with his window decorating, his advertising and his stocking of the necessary merchandise if he has not already attended to that important procedure.

Profit in Automobile Repairing

EVERY automobile service station or department is engaged in the business of repairing automobiles. The shop that is not connected with a new car sales agency has as its primary object the making of a profit from the repairing of cars. The same objective should be the rule in the service station of the car dealer, but too often it is not.

There still are car dealers who look upon the service department, or maintenance department, or repair department—whatever they choose to call it—as a necessary evil maintained only for the purpose of helping to sell new cars. That is, they believe it helps them sell new cars. They think the salesman must be able to promise "service", and they think that by perfunctorily taking care of the car for a few months after the sale, and thereby losing the greater part of their profit on the sale, they are pleasing their customers.

Far from it. Such a service department usually is inefficiently managed. The fact that it loses money proves it is inefficiently managed. It is intrusted with the obligation of making good on the new car warranty. To it the new owner comes for his adjustments and replacements, and every one of these free service jobs is

performed so grudgingly, and often so poorly, that the new owner looks forward to the expiration of the warranty period so he can go where smiling service, reasonable charges and dependable work are the rule. He often feels like going there before the free service period is up, but in most cases the delusion that he is getting something for nothing holds him the full 90 days.

When the time comes that the owner must pay for all work done on his car he becomes critical. He does not care for the poorly managed shop—the one that always operates at a loss. He wants results, and where results are delivered you will find business efficiency that insists upon a reasonable profit. The shop that delivers results stands behind its work. It strives to please not by giving something for nothing but by giving full value for the money it collects. It makes satisfied customers.

Some of the most successful new car dealers have maintenance departments that earn a profit day in and day out. The customers of these establishments come as near to being 100 per cent satisfied customers as one can find anywhere. The customers know that such a shop is honestly and efficiently managed and they have confidence in it.

To promote new car sales there is nothing better than a PROFITABLE maintenance department.

The Cost of Dirt

PERHAPS it is apathy, perhaps a thought, that it is expensive to maintain a clean shop. At any rate many shops lack much in this respect. One factor that makes for a clean appearance is the uniform used by the shop men. If the men are dressed alike and the coveralls or coats are clean, it brings business in which would be repelled by the glassy coating of grease seen on the clothing of many a shop mechanic. Women in particular are repelled by shop men who present an unpleasant appearance, so that the loss of business may cost much more than clean uniforms, even if the shop management bears the whole expense.

The Automotive Electric Service Association recommend to their members white or khaki coats for service salesmen and khaki coveralls for the other men in the shop. These garments cost about three dollars each and last about two years, the cost of laundering being about 35 cents for each garment.

This type of clothing worn by the contact men should be cleaned twice a week, while that worn by the mechanics should be cleaned once a week. The shop manager who cares to attract the right sort of trade to his place of business considers it an investment worth while.

Car Makers Mark Time Until New Year

Plants Will Not Fix Definite Schedules Until After Shows

November Demand by Retailers About Even With October But Below Month of 1923

NEW YORK, Dec. 1.—The attention of the automotive industry is directed more to the outlook for sales of passenger cars and motor trucks after the first of the year than to the prospects for any increase in business during the remaining weeks of this year. The low condition of finished stocks in dealers' hands and the small inventories of parts and materials held by producers lead to an optimistic feeling among all manufacturing branches of the industry for an upturn in production schedules early in 1925.

Passenger car makers may start increasing their orders with parts makers the latter part of the month instead of waiting for the year to open, though their schedules for early 1925 operations will not be fixed definitely until after show time. There will be some curtailment in car output this month not only because of the expected lighter retail sales but because many of the plants will close during the holiday season for plant overhauling.

November demand on the part of consumers is reported as a rule to be along the lines of the previous month but below the marks set in November of last year. Due to seasonal conditions no stepping up in sales is expected to occur much before the opening of the show season in January. There is no marked movement on the part of wholesalers or retailers to indicate any immediate improvement in consumer demand.

Consider Immediate Needs

Manufacturers are not forcing cars on their dealer organizations and dealers are not ordering cars beyond their immediate requirements. As a result of this, demand is likely to reach a fairly high point with the turn of the year and will carry along plant operations to a higher level. The farmer, one of the most important factors relied upon during the last months of the present year to absorb output, is now expected to make his presence felt in the automotive market the early part of next year. He has consumed a number of used cars but he has not developed to any extent as a new car buyer.

Optimism prevails especially among parts makers, who because of the comparatively light business transacted so far during the quarter, see an early flowing in of orders that will place their plants on capacity programs. The same conservative policy has been pursued in this branch of the industry as has been followed among car makers.

ALBERT C. BARBER DEAD

CHICAGO, Nov. 29.—Albert C. Barber, president of the Overland Motor Co., Chicago, and formerly general sales manager of Willys-Overland, Incorporated, died here today of heart failure. Mr. Barber was well known in the trade having been at one time manager of the west central division for the Overland company with headquarters at Moline, Illinois. Prior to his association with Willys-Overland he was general sales manager of the Moline Plow Company. He is survived by his widow, three sons and a daughter.

Service Equipment Associates to Discontinue at Year's End

TOWSON, Md., Dec. 1.—The Service Equipment Associates will cease to exist after Dec. 31, according to a notice sent members by Secretary G. W. Brogan, of this city, confirming a decision reached at a meeting held in Chicago on Nov. 11. This organization has represented service equipment manufacturers in contacting with the A. E. A. Merchandising Committee. Decision to discontinue followed arrangements on the part of the parent body to establish a service equipment committee which after the first of the year will represent the service equipment manufacturers in A. E. A. activities.

Officers of the Service Equipment Associates are: Commissioner, S. V. Wood, Wood-Imes Mfg. Co., Minneapolis; commissioner, Chas. F. Hodgson, Weaver Mfg. Co., Springfield, Ill.; commissioner, M. T. Rogers, Burton-Rogers Co., Boston, Mass.

NEW BUICK SALES HOME

THIENSVILLE, Wis., Dec. 1.—The Thiensville Buick Co., is at work on a new headquarters building, 65x95 ft., two stories, to be ready about Jan. 1.

Lockhart in Duesenberg Wins Ascot 250-Mile Road Contest

Opening Event for Culver City's New Speed Course Postponed Until December

LOS ANGELES, Dec. 1.—Postponement of the opening event on the new Culver City Speedway under A. A. A. sanction until Dec. 7 because of an uncompleted track, did not deprive 30,000 race fans of a holiday event.

On the new Ascot combination hill-and-dale circular speedway course a 250-mile free for all race was won by Frank Lockhart in a Duesenberg. Cannon Ball Baker finished second at the wheel of a Jewett and C. A. Chamberlain, in a Chrysler, was third.

The others of the first ten to finish were: Simpson in a Stutz; Menasco, Buick; Demeier, Hudson; Thiele, Chrysler; Vickers, Oakland; Bergere, Duesenberg; Newton, Hudson.

Almost all well-known makes started. It took three hours, 21 minutes and 40 seconds for the winning car to negotiate the distance. The Ascot course is one of the most spectacular in the country as it is laid out on the side of a chain of foothills and has many steep pitches and sharp turns. Taking the lead from Baker who stopped for a tire change Lockhart held the lead position to the end of the race without a stop.

FORD DEALERS MEET

DAVENPORT, Ia., Dec. 1.—More than 150 Ford dealers in 50 towns under the Davenport branch of the Chicago district of the company recently attended an agency meeting in the Chamber of Commerce. Dr. F. W. Gilpin of the Chicago office and Tom Costello, advertising expert of the Long-Costello Co., Chicago, were speakers.

Trade Displays Keen Interest in Campaign by A. E. A. for Big Christmas Business

CHICAGO, Nov. 29.—The merchandising department of the Automotive Equipment Association has distributed so far this season practically as many sets of Christmas window cards and streamers as were put out during the entire holiday season last year. In a number of cities the jobbers have united in a Christmas selling campaign and have purchased enough of the A. E. A. material to supply all dealers in their territories.

With the holiday selling campaign under way dealers are beginning to send into the A. E. A. merchandising committee photographs of their Christmas windows which they wish to enter in the association's \$500 prize contest. This contest closes on Dec. 24 and for the best decorated window of which a photograph is submitted the A. E. A. will pay \$150. The second prize is \$100, third prize \$75, fourth prize \$50, fifth prize \$25, and the next 10 prizes \$10 each.

Entry blanks for this contest are available from all A. E. A. jobbers or may be obtained from the headquarters of the association in the City Hall Square Building, Chicago.

Make Formal Announcement Of Big Body Building Merger

New Corporation Launched to Take Over Plants Headed by Allen Sheldon as President

DETROIT, Dec. 1.—Formal announcement of the formation of the Muray Body Corp., to take over the assets and combine the C. R. Wilson Body Co., J. C. Widman Co., and Towson Body Co., shows the company will have a capitalization of \$12,300,000 of which \$4,000,000 will be in first mortgage 7 per cent sinking fund gold bonds due Nov. 15, 1934, \$2,500,000 in 8 per cent cumulative preferred stock, \$100 par value, and \$5,800,000 non-par value common. The common stock represents 145,000 shares stated value \$40.

The officers of the company as shown in the incorporation are Allen Sheldon, president; Duncan J. McNabb, James R. Murray and Thomas M. Lewis, vice-presidents; Jerome E. J. Keane, treasurer, and Frederick A. Carey, secretary.

J. W. Murray will be chairman of the board. The company will be affiliated with the J. W. Murray Manufacturing Co., stampings manufacturer. Gordon Fairgreaves, who has been general manager of the Towson Company for many years will be general manager of the Murray Body Corp. Aside from the Murays, the officers shown in the incorporation are mainly representatives of financial interests. Mr. Fairgreaves is well known as a body builder. It is understood that the Towson Company will continue as the high grade body builder of the combination while the Wilson and Widman Companies will continue the manufacture of medium priced and low priced bodies. The normal capacity of the plants at the present time is for approximately 20,000 closed and 10,000 open bodies monthly.

In the formal statement on the merger it is declared that this action has been taken in view of the trend toward concentration of production of automobiles into a lesser number of producers.

The position of the J. W. Murray Company to Murray Body, it is declared will be as an affiliated company. In connection with its relationship to the Body company, the J. W. Murray Company has bought 36 acres on the Detroit river in River Rouge on which it will build a new factory. A first unit of this plant 40x460 feet will be completed by Feb. 1.

CADILLAC AGENTS ANNOUNCED

DETROIT, Dec. 1.—The Cadillac Motor Car Company has named the following new dealers: Overland-Rickard Co., Champaign, Ill., Cadillac Sales & Service Co., Saginaw, Mich.

The company also announces the following sub-dealers: E. A. Brown Auto Co., Inc., Passaic, N. J., E. A. Browne Auto Co., Inc., Ridgewood N. J.

PIERCE-ARROW REPORTS PROFITS

BUFFALO, N. Y., Nov. 29.—Pierce-Arrow Motor Car Co. shows net income in October after charges of \$144,299 compared with \$137,280 in the third quarter of the year, \$138,144 in the second and \$78,729 in the first. The company reports that its distributor and dealer organization has grown from 75 on Jan. 1 to 225 at the present time.

300 Expected to Participate in Motor Finance Discussion

CHICAGO, Dec. 1.—An attendance of more than 300 is promised at a meeting of representatives of automobile finance companies, banks, bonding and insurance companies and automobile manufacturers to be held in the La Salle Hotel Dec. 10 and 11, to discuss time sales of automobiles.

The meeting proposes to discuss better credit investigation systems and a change in existing time payment methods, following the recommendations recently made at a meeting of financing interests in this city. These recommendations favor a universal policy of 33 1/3 per cent as an initial deposit on new passenger cars instead of the 20 or 25 per cent allowed by some companies, and would reduce the period of payments from two years to a maximum of one year. They also favor having the payments made in equal monthly installments instead of a lump sum every three or four months.

Members of the committee state that they hope to make all automobile paper desirable to the banks, and say that by reducing the time for payments and increasing the initial deposits fewer purchasers would default and the depreciation on defaulted cars would be lessened.

Bassick-Alemite Shareholders Given Stock Exchange Notice

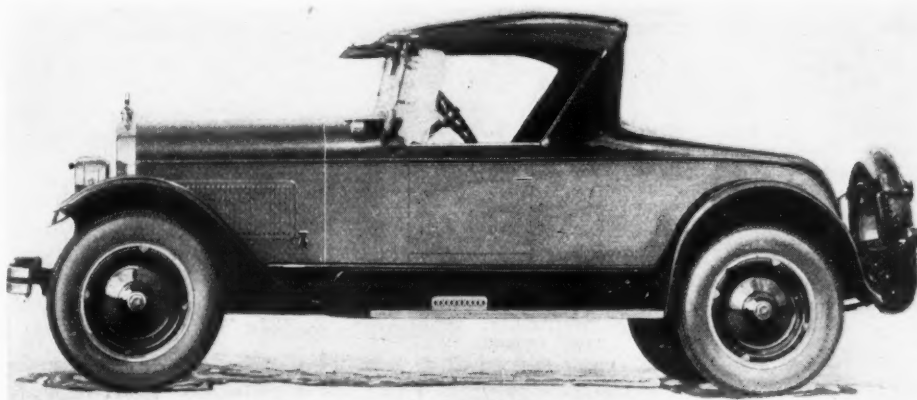
Can Trade for Stewart-Warner on Basis of 10 to 7, Says Statement

CHICAGO, Nov. 28.—Stockholders of the Bassick-Alemite Corporation are given until Dec. 10, 1924, to exchange their shares for Stewart-Warner Speedometer Corporation stock on the basis of 10 shares of the former for seven of the latter, according to a statement issued by C. B. Smith, president of the Stewart-Warner organization. This is the same basis of exchange as provided for the contract by which Stewart-Warner takes over the majority stock of the Bassick-Alemite Corporation.

"The acquisition of the Bassick-Alemite Corporation," says Mr. Smith, "will very materially strengthen the Stewart-Warner Speedometer Corporation by adding to its line not only the Alemite lubricating system and other automobile accessories in which the Stewart-Warner Corporation is a leader, but adding to its line casters and furniture hardware in large volume, thus giving it other lines of importance outside of those used on automobiles. The profits of the Bassick-Alemite Corporation for 1923 after taxes and depreciation, were \$1,401,465.60, or approximately \$7.00 a share on the 200,000 shares outstanding. The profits for the nine month to Sept. 30, 1924 after taxes and depreciation, were \$1,139,220.44. Earnings of both companies should be materially increased through this amalgamation, wider sales distribution, savings in overhead and a large saving on the larger volume of purchases."

It is said there are 5,000,000 Alemite systems in use on automobiles at present and that there are 20,000 service stations.

New Flint Four Passenger Roadster Added to Line



The new four-passenger Flint roadster recently added to the line. The seat for the extra passengers also forms the deck which is raised or lowered by means of a lever patented by the Flint company

October Registrations Off 8 Per Cent in Illinois-Indiana

High Price Lines Gain in Both States Compared with September, But Net Is Down

CHICAGO, Nov. 28.—Total sales of new passenger cars in both Illinois and Indiana, as revealed by registration figures, showed a loss of 8 per cent for October as compared with the preceding month. All classes scored losses in both states with the exception of the high priced cars in Illinois, which gained 20 per cent, and medium and high priced vehicles in Indiana, which showed gains of 3 and 11 per cent respectively. The greatest losses were shown by the low priced (excluding Fords) cars, the decreases being 17 per cent for Illinois and 15 per cent for Indiana.

The following table indicates the percentages of loss or gain for each class for both Illinois and Indiana, the basis of comparison being the month of October as against September:

ILLINOIS		Per Cent
		Loss
Fords		13
Low, excl. Fords		17
Medium		0.6
High		20*
Total		8
*Gain		
INDIANA		Per Cent
		Loss
Fords		14
Low, excl. Fords		15
Medium		3*
High		11*
Total		8
*Gain		

Following are the detailed figures for the first ten months of 1924:

ILLINOIS					
Month	Fords	Low		High	
		Excl.	Med.	Price	Total
Jan.	4,101	2,187	5,871	1,013	13,172
Feb.	3,201	1,724	3,762	567	9,254
Mar.	5,708	2,396	4,761	600	13,645
Apr.	12,461	4,805	8,073	964	26,303
May	10,779	4,234	7,151	862	23,026
June	6,626	2,539	4,675	503	14,343
July	9,014	3,428	6,774	787	20,003
Aug.	6,647	2,363	5,227	541	14,778
Sept.	4,867	1,586	3,580	453	10,486
Oct.	4,199	1,307	3,555	546	9,607
Total	67,693	26,569	53,429	6,926	154,617
INDIANA					
Month	Fords	Low		High	
		Excl.	Med.	Price	Total
Jan.	4,106	1,007	1,259	104	6,476
Feb.	4,748	1,353	1,743	181	7,965
Mar.	6,664	2,054	2,688	215	11,621
Apr.	8,126	2,760	3,449	108	14,533
May	6,423	2,295	2,880	174	11,772
June	4,542	1,548	2,220	159	8,469
July	4,191	1,470	2,308	139	8,108
Aug.	5,036	1,692	2,457	127	9,312
Sept.	3,514	1,022	1,902	99	6,537
Oct.	3,022	867	1,967	110	5,966
Total	50,372	16,068	22,873	1,446	90,759

The foregoing statistics were compiled from figures furnished by Robinson's Advertising Service, Springfield, Ill., and Indianapolis Auto Trade Assn., Indianapolis, Ind.

GAS PRICE ADVANCED

NEW YORK, Dec. 1.—The Standard Oil Co. of New York has advanced the tank wagon price of gasoline 1 cent a gallon throughout the New England territory, bringing the price to 15 cents a gallon which is in line with the price prevailing in New York. The Gulf Oil Co. has adjusted tank wagon prices to meet the Standard increase.

Ford Motor Company Reduces Its Prices on All Models

DETROIT, Dec. 2.—Ford Motor Co. has made a price reduction on all models ranging from \$5 to \$25. New prices are:

Chassis	\$225
Roadster	260
Touring	290
Coupe	520
Tudor Sedan	580
Fordor Sedan	660
Truck Chassis	365

The new prices are extended to all persons buying cars under the new weekly enrollment plan.

Loading Firm Not Absorbed in Consolidation, Says Evans

DETROIT, Nov. 29.—Report that the control of E. S. Evans & Co., automobile loading experts of this city, had passed to the Stewart-Warner Speedometer Corp. in the recent merger of Stewart-Warner and the Bassick-Alemite Corp. is incorrect. Through the merger of these two companies control of the Evans Company reverts to E. S. Evans, the company now being owned by Mr. Evans and Chicago interests, according to a statement by Mr. Evans.

Control of E. S. Evans & Co. was transferred from Mr. Evans to the Bassick-Alemite Corp. last winter. The latter organization bought 51 per cent of the stock, sold Mr. Evans a large block of Bassick-Alemite stock and made him vice-president and a member of the board, as well as continuing him and his organization at the head of the Evans Company without any change in personnel.

With the merger of the Stewart-Warner and Bassick Corporations, E. W. Bassick, together with Mr. Evans and J. G. Alexander, vice-presidents, will have sold out their interests in the Bassick Company and will tender their resignations, Mr. Evans said.

As a result of the merger Mr. Evans will again devote practically his entire time to E. S. Evans & Co. The devices of this company are at present used in loading 90 per cent of the finished passenger cars and trucks shipped by rail.

TAKE ON MAXWELL-CHRYSLER

QUINCY, Ill., Dec. 1.—The Quincy Cadillac Company, has taken over the Maxwell and Chrysler agency to be handled with the Cadillac line.

Hudson Motor Car Company Again Reduces List Prices

Coach Models Now Offered at Lowest Figures on Schedules for Respective Lines

DETROIT, Dec. 1.—The Hudson Motor Car Co., has reduced the price of the Hudson and Essex Coaches \$50 so that they now list at \$1345 and \$895 respectively. The prices of both the 5 and 7 passenger Hudson Sedans have been lowered to \$1795 and \$1895, a cut of \$355.

With this reduction, the Essex Coach now lists for the first time at a figure below the cost of the open model, the touring car costing \$5 more. The 7-passenger open Hudson models are now \$155 higher than the Coach. No changes have been made on any of the open models and the new prices are effective immediately. The following table shows the new schedule:

ESSEX		Price	Price
		Old	New
5-pass. Touring		\$900	\$900
5-pass. Coach		945	895
HUDSON		Price	Price
		Old	New
4-pass. Speedster		\$1400	\$1400
7-pass. Phaeton		1500	1500
5-pass. Coach		1395	1345
5-pass. Sedan		2150	1795
7-pass. Sedan		2250	1895

HUDSON PAYS DIVIDEND

DETROIT, Nov. 29.—Hudson Motor Car Co. has declared the regular quarterly dividend of 75 cents, payable Jan 2 to stock of record Dec. 15.

CELEBRATE ANNIVERSARY

PITTSFIELD, Mass., Dec. 1.—Albert V. Phillips, head of the City Garage & Sales Co., Dodge Brothers distributor for Berkshire County and Bennington, Vt., was guest of honor at a dinner in Hotel Wendell on the 10th anniversary of his signing his first Dodge contract here. There were 31 in attendance, including members of the staff of the Berkshire Cadillac Co. as well as of the City Garage & Sales Co. The anniversary was further observed by a special exhibition of the latest Dodge models in the City Garage show rooms.

Cadillac Company Advances Its Open Model Listings \$100

DETROIT, Nov. 29.—Cadillac Motor Car Co. has increased the price of its three open models, four-passenger roadster, four-passenger phaeton and seven-passenger touring, from \$3085 to \$3185, the increase of \$100 applying in each case.

Coordination of Transportation Slated for Boston Conference

Gathering Set for Dec. 8-9 Will Continue Effort Launched by U. S. Chamber of Commerce

BOSTON, Dec. 1.—To follow up the work done by the Transportation Conference of the Chamber of Commerce of the United States a year ago when a committee headed by Alfred H. Swayne, vice-president of the General Motors Corp., presented a report that paved the way for the co-ordination of all forms of transportation into one system, a New England Motor Transport Conference will be held at the Copley Plaza Hotel, this city, on Dec. 8 and 9. It will be sponsored by the National Automobile Chamber of Commerce.

The conference will be opened by Mr. Swayne, who will speak for the automotive industry. The attitude of the railroads will be outlined by C. L. Bardo, general manager of the New York, New Haven & Hartford Railroad, that of the electric lines by Lucius S. Storrs, president of the Connecticut Co., and that of the independent users of trucks and buses by James M. Swift, counsel of the New England Motor Coach Association.

Following the addresses, the conference will be split up into three discussion groups, one to devote its time to the motorbus problems, another to the motor truck and its relation to rail hauls and the third will be a highway session at which New England's highway system will be discussed.

Opportunity will be offered for full discussion of the competitive situation which exists between motor and rail carriers in New England. The question of regulation of motor carriers and their taxation will be thoroughly considered. Representatives will be present from railroads, street railways, shippers and motor carriers.

BUSINESS PICKS UP

KOKOMO, Ind., Dec. 1.—The automotive industry in Kokomo has taken a new lease of life since the national election has become a thing of the past. Small accessory plants, of which Kokomo has a goodly number, have received orders within the last ten days which promise continuous production through the winter and far into the coming year.

The Hoosier and Malleable Iron companies, whose products consist mainly of castings for automobile housings, are picking up their old night shifts. The Kokomo Spring Co., is also picking up in a most encouraging manner. This turn for the better has caused most of the small manufacturers to become optimistic. Employment departments of 15 different institutions report a gradual increase in working forces until at this time most of these factories are within a slight per cent of their normal basis.

RECORD FOR MILTON

LOS ANGELES, Cal., Dec. 1.—Driving in practice on the new Culver City speedway yesterday Tommy Milton established a new lap record when he negotiated the mile and a quarter at the rate of one hundred twenty-nine and three tenths miles per hour.

Dodge Brothers Clip Prices on Cars from \$10 to \$155

DETROIT, Dec. 1.—Price reductions on the majority of the models of the Dodge Brothers line were announced today as follows:

Roadster	\$ 855
Touring Car	885
Business Coupe	995
"B" Sedan	1,095
"A" Sedan	1,245
Special Roadster	955
Special Touring	985
Spec. Business Coupe	1,095
Spec. "B" Sedan	1,195
Spec. "A" Sedan	1,330

The regular models are now equipped with four balloon tires as standard equipment and the specials models with five balloon tires. The price changes represent a reduction of \$10 on the open models, \$40 on the two business coupes and \$155 on the two "B" sedans and the two "A" sedans.

Wholesale Volume in Mid-West For October Below September

CHICAGO, Dec. 1.—Automobiles sold at wholesale during October by representative distributors of the Middle West, reporting to the Federal Reserve Bank of Chicago, were in smaller volume than in the preceding month but greater than in October, 1923, according to the bank's monthly analysis. Retail sales, according to the bank, also decreased slightly as compared with the month preceding, remaining considerably below those of a year ago.

The bank finds that stocks of new cars with dealers decreased from the preceding month and October, 1923, the year-to-year comparison showing the first drop since the compilation of these figures was begun in July, 1923. Used cars sold in the Mid-West during October increased over September, as well as over October a year ago. The number of salable used cars in dealers' hands on Oct. 31 was greater than on Sept. 30, 1924 and Oct. 31, 1923, the used cars on hand Oct. 31, last, representing 125.8 per cent of the used car sales during the month.

CHARTER USED CAR EXCHANGE

MANSFIELD, Ohio, Dec. 1.—The Mansfield Used Car Exchange, Inc., has been chartered with a capital of \$50,000 to deal in used cars. G. C. Albrecht, A. M. Colby, Howard Miller, R. B. Gardner and David F. Brucker are the incorporators.

Several Important Changes Made in Engine of Star Car

New Features Adopted Tend Toward More Power With Better Acceleration

NEW YORK, Dec. 1.—Several changes have been made in the design of the engine of the Star car, practically all of them tending toward more power with better acceleration. The bore has been increased from 3 3/8 in. which increases the piston displacement from 285 to 381 cu. in. Aluminum alloy pistons of Lynite design are used instead of the former cast iron type. The new pistons have the characteristic Lynite split skirt. The piston pin floats in both the piston bosses and the top end of the connecting rod being retained by two steel snap rings in the outer ends of the piston bosses. The only change in the connecting rod itself is that a bronze bushing is now placed in the upper end. Previously the pin was clamped in the upper end of the rod, the bearing being in the piston bosses. In spite of the increased diameter the weight of the reciprocating parts has been reduced by the new type pistons. The weight of the pistons alone is 3.04 lbs. lighter for the set of four and the weight of the whole assembly is 1.01 lbs. lighter for each piston or 4.04 lbs. for the set of four. The further decrease in weight is accounted for by the fact that the new piston pins are hollow while the old ones were solid. The old pin weighed 32 lbs. and the new pin weighs 25 lbs. The compression ratio remains approximately the same as before. The piston has three 1/8-in. rings all above the pin.

Another change that has been made is in the oil filler which was previously mounted on top of the chain case. The removable plate on the front of the case has now been re-designed to include the oil filler which is of larger diameter, allowing the oil to flow faster.

In addition to the changes in design better balancing methods have been introduced at the factory so that the smoother running due to better balance has also tended toward increased power. The maximum horsepower of the new engine is 35 against 29 for the old at 2800 R. P. M. In both cases the torque of the new engine is 87 lb. ft. against 75 lb. ft. for the old engine, both taken at 900 R. P. M.

HANDLE FORD AND LINCOLN

MEMPHIS, Tenn., Dec. 1.—Maury-Newsum Inc., Poston Maury, president, Thornton Newsum, vice-president and Dan Pope, secretary and general manager, have taken over from the McCreery-Phelan Co. by purchase the Ford-Fordson and Lincoln dealer agency, located at 300 Monroe avenue. Dan Pope has been connected with leading automobile firms in Memphis for several years.

Chevrolet Body Factory at Tarrytown Promised by Jan. 1

Completion Will Mark Fruition of Plan to Minimize Freight Costs to Assembly Plants

DETROIT, Nov. 29.—The completion of the body plant adjoining the Chevrolet assembly plant at Tarrytown by Jan. 1, will mark the fulfillment of a plan by the Chevrolet company to parallel each of its assembly plants with a body plant, thereby reducing freight costs on body shipments to a minimum. The assembly plants at which body factories are now being operated by Fisher Body Corp. are at Flint, St. Louis, Oakland, Cal., Janesville, Wis., Cincinnati and Buffalo.

The company notes that there has been a close connection between the establishment of assembly plants and the gradual reduction in prices in the last five years, particularly since the body plants have been connected with the car assembly units. These body plants are owned by the Chevrolet Company, but operated by Fisher corporation as the body building organization of General Motors.

From early in 1920 to the present day there have been reductions in the price of Chevrolet cars approximating 35 per cent. In addition to the economies effected and the consequent price reductions, there has been a steady improvement in the quality of the product. New features have been added to the standard construction which have increased the comfort and convenience of the vehicle.

LATINS BUY MORE CARS

WASHINGTON, Nov. 29.—Exports of cars and trucks into Latin American countries during the first nine months of this year establishes a record, which has already more than equaled the volume for the entire year of 1923, according to compilation of figures by the automotive division of the U. S. Department of Commerce showing Latin America's automotive development at the present time and comparing it with previous years.

Altogether the exports from the United States, the first nine months of this year, went to 31 Latin American countries and totaled 7,275 trucks, having a value of \$4,548,987 and 35,643 passenger cars, having a value of \$22,693,466.

FIAT TO DOUBLE CAPITAL

WASHINGTON, Nov. 29.—Cabled advices to the U. S. Department of Commerce state that Rome, Italy, papers lately carried a story to the effect that the existing capital stock of the Fiat Motor Company, now L200,000,000 is to be doubled, the capitalization of the company to be made L400,000,000. Along with this definite statement is the rumor that holders of old stock are to be given a preferred chance to subscribe to the increased capital, which will be sold at par.

City Would Sell Gasoline

TORONTO, Ont., Nov. 24.—The Legislature Committee of the City Council of Toronto, by a vote of 6 to 3 decided to apply to the Legislature for powers to purchase, distribute and sell gasoline, and without a vote of the people raise \$50,000 by the sale of bonds to finance the undertaking. It was feared by several members of the Council that such an undertaking would prove unprofitable.

GAS OUTPUT HITS RECORD

WASHINGTON, Nov. 29.—Gasoline production of the United States reached a new high record during September when the refining industry produced 25,000,000 gallons a day for the entire month, according to figures of the U. S. Bureau of Mines. The daily production rate for September represents an increase over the August daily production of 2.5 per cent and an increase of 20 per cent over the daily average of September, 1923.

The domestic demand, 85 per cent of which is used in cars and trucks, fell 100,000,000 gallons short of the high record consumption figures attained in August. This was principally due to the waning of the automobile season, the Bureau states.

Stocks of gasoline on hand at refineries Oct. 1 were 1,230,000,000 gallons, representing 51 days supply at the rate of domestic demand. This compares with 45 days supply on hand Oct. 1 of last year.

HAS DODGE BROTHERS AGENCY

LUBBOCK, Tex., Nov. 24.—T. J. Hubbard of Lubbock, has bought the Dodge Brothers Agency in Sherman, Texas. He has acquired the business of the North Texas Motor Company and is now pushing Dodge sales in the "blackland belt."

Uniform Signs at Crossings And Road Curves to Be Urged

Hoover's Engineering and Construction Committee Would Bar Certain Types from Highways

WASHINGTON, Dec. 1.—Recommendations that "de luxe" buses, which have a wider spread of rear wheels than other models, be barred from highways unless they can pass over every section of the highway without encroaching upon the lane of traffic in the opposite direction, is to be one of the outstanding recommendations of the Committee on Engineering and Construction of the National Conference on Street and Highway Safety, in its report which will be rendered when the Conference meets here Dec 15, 16 and 17.

The report will recommend uniform signs and signals of visibility, at grade crossings, and curves, more parking space and the need of providing right-of-way for parking spaces, for clear view at intersections and for future highway widening "before the cost of land becomes prohibitive."

Foreseeing a vastly greater amount of motor traffic in the future, the Committee, after several months of study, has prepared recommendations as to the most modern practices calculated to increase the capacity of the highways and at the same time to improve safety. Only a very small percentage of the street and highway accidents today can be attributed directly to construction and engineering defects, the Committee found.

MODINE ADDS TO CAPACITY

RACINE, Wis., Dec. 1.—Hhe Modine Mfg. Co. of Racine, Wis., manufacturer of radiators for passenger cars, trucks, tractors, etc., has completed a substantial addition to its factory to handle several large contracts to furnish original equipment to passenger car builders. All of the additional capacity is fully occupied from the opening of the extension, and it is believed likely that further enlargement of the factory will be necessary.

St. Louis Accessory Association Pledges Stores to Stage Xmas Window Displays

ST. LOUIS, Mo., Dec. 1.—The Automotive Accessory Association of St. Louis launched plans for the coming Christmas campaign at a recent meeting. The slogan to be used in the Christmas drive this year is the same as the one so successfully used last year. "Give Something for the Car for Christmas."

A committee which had been appointed to aid in the installation of attractive window displays of accessories in all sections of the city reported at the meeting that arrangements had been made for 110 window displays. The committee is composed of C. D. Wagener, Beck &

Corbitt Iron Co., chairman; J. L. McHugh, Fred Campbell Auto Supply Co.; H. H. Fleer, Fleer-Petty Auto Accessories Co.; E. H. Kansteiner, Sligo Iron Store Co., and C. C. Schelp of the Frampton Co.

Dan F. Hyland, president of the Association, presided and behind the speakers' table was displayed the various show cards which are to be used in the campaign.

Carl Palman of the Parker & Waterman Co., of Los Angeles and J. J. Hanlon of the National Institute, New York, were the speakers.

172,000 New Car Sales for Texas in 1924, Is Predicted

Pronounce 1924 as Best Year of Industry's History in the Lone Star State

DALLAS, Texas, Dec. 1.—Taking the reports of dealers all over the state made to distributors for the first eleven months of the year, and using the general average sales per month for that period, the number of new cars sold in Texas in 1924 will be approximately 172,000.

The average retail price of those cars, all designs and makes included, was estimated at around \$750. That would make the value of the new cars sold in Texas for 1924 nearly \$121,000,000.

These figures, automobile dealers declare, represent much better totals than they had anticipated. This year is the best in the history of the industry in Texas and the dealers are inclined to believe the heavy buying of motor vehicles will continue another year.

Dealers who have kept closely in touch with the automotive situation in Texas, declare probably some 75,000 cars were junked or moved out of the state during the year.

ABANDON LANDMARK

CLEVELAND, Dec. 1.—One of the automobile landmarks of Euclid avenue has disappeared. It is the salesroom of the Cleveland Cadillac Co., which for more than a decade has been located at 20th and Euclid avenue.

The new sales and display room is at Chester avenue and 30th street, where the company has for years maintained service stations.

T. H. Towell, president of the company, enjoys the distinction of being the oldest continuous distributor in Cleveland.

MAXWELL AND CHRYSLER ONLY

COLUMBUS, Ohio, Nov. 24.—The Dobson Auto Sales Co., 207 North Fourth St., announces that it will limit its lines to the Maxwell and Chrysler in Columbus and central Ohio territory. The wholesale distribution of those lines in a larger part of Ohio and a portion of Kentucky will be handled by the Lostro Auto Sales Co. of Columbus and Athens of which J. R. Lostro is president. The Lostro Auto Sales Co. will carry a full line of parts at its service department, 400 Dublin avenue.

TAKE OVER STUDEBAKER AGENCY

LITTLE ROCK, Ark., Dec. 1.—The Capitol Automobile Co., successor to the Cook Automobile Co., 1108 Main street, recently took formal possession of the new quarters, and hereafter will continue to sell Studebaker cars and render Studebaker service, as was done by R. A. Cook, principal owner of the selling concern. W. W. Sorrels and Gene Smith will have active charge of the new firm.

WIN PACKARD SERVICE PRIZE

BOSTON, Nov. 29.—More than 300 employees of the Packard Motor Car Company of Boston were present at the victory dinner held at the salesrooms to celebrate the winning of the service prize by the local force. H. N. Davok came on from Detroit bringing the congratulations of President Alvin MacAuley and the other executives. Brief addresses were made by Mr. Davok, Roy A. Metler, I. R. Boles, N. Frank Neer, C. A. Robinson, and W. P. Naylor. A telegram was read from Lieutenant Governor Alvin T. Fuller, owner of the Packard agency here, apologizing for his absence due to campaigning, and also praising the employees for their loyalty. There was an entertainment following the speaking.

LARGER HOME FOR STUTZ BRANCH

CHICAGO, Dec. 1.—The Chicago factory branch of the Stutz Motor Car Company, formerly located at 2313 So. Michigan avenue, is now established in larger quarters at 2247 So. Michigan avenue. The factory branch is the successor of the Stutz Chicago Company, distributors. The branch recently held an enthusiastic dealers' luncheon at the Metropole Hotel. Some 35 dealers of this territory attended. E. T. Klee, assistant to president, William N. Thompson, of the Stutz Company, was a guest. New policies were outlined and business conditions discussed.

COMPANY INCORPORATES

CHEVIOT, Ohio, Dec. 1.—The Western Hills Motors Co. has been incorporated with a capital of \$25,000 to buy, sell and repair autos and accessories. Incorporators are: A. C. Gallagher, Charles W. Broeman, Bert H. Lang, A. A. Kattue and Frank Broeman.

Warn Trade Against Fly-By-Nights

WASHINGTON, Dec. 1.—A warning to garagemen, dealers and motorists to guard themselves against "Fly-by-night" concerns engaged in selling meaningless "service" contracts and against fake insurance and motor organizations, has been issued by the National headquarters of the American Automobile Association here.

A statement just put out by the Association declares that the association's investigators have found more than fifty fraudulent organizations operating in various parts of the country selling "every conceivable kind of service, from accident to discount privileges at garages, supply stations, hotels, etc.," to gullible car owners.

Conservative Stock Market Policy Announced by Hertz

Yellow Manufacturing Shares to Be Kept on Investment Basis, According to Plan

CHICAGO, Nov. 29.—Declaring he was "pitchforked into the stock market" and that he is going to "pitch" himself out of it, John Hertz, president of the Yellow Cab Manufacturing Company, has issued a statement which in financial circles is considered very significant as well as mildly sensational. The statement was issued following a meeting of the board at which it was voted to hold dividends down to \$2.52 a share in 1925 as against \$5.00 a share in 1924. The directors voted to pay at the rate of 21 cents a month, commencing Feb. 1, 1925. By this action of the directors Mr. Hertz says he has taken the first step to put the securities of the Yellow companies on an investment basis, and he adds—

"I don't care what the stock market does nor will any other member of the board."

In another section of the statement he says:

"I have had a bitter lesson. We listed our stocks in the midst of a depression, at a time when it was inflated in price. I knew it was inflated, but did not consider it was dangerous."

"I have done nothing for the last six months but worry over the stock market action of our securities. I had an eye glued to the tape most of the time, and missed many a good night's sleep. I am through with this forever."

Business Prospects Good

"I anticipated that we will earn much more than our \$2.52 dividend next year on Yellow Manufacturing stock," observes Mr. Hertz, "but we won't pay a cent more than that. Surplus earnings from now on are going to be ploughed back into the company. We are going to do a big business, particularly in manufacture of buses. We are getting big orders every day and I have every reason to believe that this end of our business is going to keep our factories extremely busy next year. Also we do a very big taxicab business to say nothing of the sale of trucks and drive-it-yourself taxicabs, both of which lines have started out promisingly."

CORRECTION

The price of \$55 mentioned in the description of the Sheet Metal Torch made by the Alexander Milburn Company of Baltimore, published in the Oct. 30 issue of MOTOR AGE, is the price for the complete unit consisting of a torch, three tips, an oxygen and an acetylene regulator, hose, supply of steel, cast iron and bronze rods and fluxes a pair of goggles, a pair of gloves, friction lighter and set of wrenches. The price of the torch alone was not quoted.

Departments Essential to Transportation Store

(Continued from page 10)

used cars, as well as those stored daily or monthly by customers.

2. Washing and polishing.
3. Greasing and oiling.
4. Sales of gasoline and oil.
5. Quick Service department.
6. Repairing of motor vehicles.

Easy Access Desirable

Now as before mentioned there obviously cannot be a definite means of separating all of these various departments by walls or partitions and in fact departmentization does not necessarily mean a physical separation of one section from another by partitions. Two or three, and even more, of the above mentioned divisions may be grouped in the same room. There also may be an overlapping of departments.

For example, the parts stockroom may be so placed that access to it can be had by customers who enter the showroom or office of the business. But we know that the shop is going to use parts in the repairing of cars and trucks and hence the arrangement of the stockroom should be such that the mechanics can get parts as readily as customers. In that way it might be said that the stockroom belongs to both the showroom and shop. That is generally the case with the small establishment. The very large dealer establishment may have the parts department entirely separate from the showroom, with a separate department for the shop. But the smaller personnel of the small establishment means a doubling up of departments.

Imagine the chaotic conditions if all of the above-mentioned things were done in one large room with no thought of orderliness or system. It would mean a man selling a car to a customer in one corner of the room and next to him a greasy mechanic struggling with a messy-looking rear axle. The boss' desk might be right up against the battery-charging rack and the fumes of the acids would take all the joy out of his life. There might be a lathe all by itself and other machinery gathered together in a far corner. Cars of every description might be strewn all around and on top of all this we should expect to find a man washing a car anywhere but where he ought to be. It is hard to conceive of such conditions but they exist, perhaps in a milder form, in many of the places of business which have not as yet departmentized.

There is danger of over-departmentizing and this is just as costly as running a business in a haphazard manner. Some dealers have set aside too much space for certain departments and the overhead from these gnaw at the cash register every day. Such non-productive de-

partments require light, heat, rent and upkeep, and are definite obstacles to a profitable business.

Rather than build a small efficient place many have put up a large rambling place that is anything but a profitable investment. This is sometimes caused by a dealer expecting to operate a motor car business in all its ramifications. He intends to sell cars, service them, sell accessories, run a general shop, tire shop, battery shop and everything else connected with the retail end of the motor car business. Then he finds that it takes a good man to head each of these departments. He cannot afford to pay these men what they ask and gradually he drops certain departments. That is why you will find today many buildings utterly too large for the dealer. Such a building will have rooms or divisions which stand idle over long periods. Some of them are used for storing all sorts of material from packing boxes to new cars and some the dealer opens up only in the spring when the tourist trade brings in a certain amount of over-night storage.

It is a great deal like the "best room" or parlor of some years ago which was closed six days out of the week and opened on Sundays for "company." Since then the "best room" has given way to the modern living room used every day to advantage. That is what we have as yet to learn with a lot of our present day motor car retail establishments. There are still too many "best rooms" in them, be they showrooms or just plain "store-rooms."

Next week's article in the Profits Series will be on the subject "How Much Is Enough Space?"

3 Per Cent of Motor Drivers Careless

BALTIMORE, Md., Dec. 1.—Only about three per cent of automobile drivers are careless, or reckless, according to Thomas H. Carrow, safety superintendent of the Pennsylvania Railroad, who spoke at the Safety Drivers' School of the Baltimore Safety Council.

A check made during August, September and October, over the entire Pennsylvania system, covering 13 states, revealed that of 114,257 automobiles noted by men stationed at crossings, 97 per cent of the drivers observed reasonable care, he said.

Of 682 crossing accidents during the three months period, 487 were daylight hours and 195 at night, showing that "inability to see the railroad is not so much a factor in crossing accidents as failure of drivers to watch where they are going," the speaker said.

Increased Tire Production Shown in September Survey

Output Larger Than Same Month Last Year With Shipments Reduced, Statistics Reveal

NEW YORK, Nov. 29.—Increased production and reduced shipments during September are shown in the tire statistics compiled by the Rubber Association of America for that month. The exception is balloon casings which show a drop in output.

Production of high pressure cord casings for September, last, are put at 2,077,359, compared with 1,169,140 in the same month of 1923. Last September's cord casing shipments were 1,959,306, compared with 1,457,778 in September, 1923. Balloon casing production in September, 1924, is put at 479,755 with shipments 398,324. September's fabric casing output was 973,764 with shipments 1,046,609 compared with an output of 860,441 and shipments of 1,214,777 in September, 1923. High pressure inner tube output was 5,039,594 with shipments 4,823,039 against an output of 3,254,575 and shipments of 3,724,724 in September, 1923. Balloon inner tube production last September was 466,848 with shipments 357,765 against an output of 427,302 and shipments of 357,765 in the preceding August.

Milan Behind International Motor Championship Race

PARIS, Nov. 18 (By Mail).—Following the example set by the A. A. A., an international racing championship has been formed in Europe by the Automobile Club of Milan. The qualifying events are Indianapolis, the European Grand Prix in Belgium, the French Grand Prix near Paris, Brooklands race, and the Italian Grand Prix on Monza track, all of which will be for 122 cubic inch cars.

The championship prizes offered by the Italian club are 50,000 francs and a trophy to the firm and 20,000 francs to the driver. Points will be awarded on the basis of 1 for the winner, 2 for the second man home, and 3 for the following positions. Four points will be given in case of non-starting. The winner will be the driver having the lowest number of points.

QUITS AUTOMOTIVE FIELD

COLUMBUS, Ohio, Nov. 29.—D. B. Austin, who for some time was connected with the Carroll-Thompson Co., distributor for the Chevrolet, holding the title of vice-president, has recently resigned his position to go back into the oil business. A. F. Hutchins, formerly sales-manager at this place has been named to take his place, and at the same time have full charge of sales.

Want All Industry to Know of Trade Days at Big Shows

**Publicity, Letters and Stickers to Be
Used in Promotion Campaign
by M. & A. M. A.**

NEW YORK, Dec. 1.—Plans for informing the entire automotive industry regarding the two days of exclusive trade attendance which will open the New York and Chicago national automobile shows next January have been completed by the Motor & Accessory Manufacturers' Association. The promotion work will include publications, letters and stickers.

Issues of the Show News, the publication of the show department, telling the story of the trade days and of the parts and accessory exhibits, are to be distributed.

Meanwhile the National Automobile Chamber of Commerce will issue invitations and credentials for admission on the trade days to executives in the manufacturing, wholesaling, retailing and service divisions of the industry. Individual manufacturers are arranging for circular matter of their own.

Under the new plan the New York show will open at 10 a. m. Jan. 2. Only the trade will be admitted up to 7 p. m. This same plan will be carried out at Chicago, where the show will be opened Jan. 23.

NASH CONTINUES LONG STRIDE

KENOSHA, Wis., Nov. 29.—November will set another new Nash sales record, according to every indication in the first half of the month, says a factory statement. Continued demand for the new Nash series of cars, it is stated, will make this the greatest November in the history of the Nash Motors Company and a very close second, in point of sales, to the month of October which had the greatest business ever recorded by Nash.

Night shifts were put on at the factory in Kenosha within a few days after the announcement of the new line, two weeks later the Milwaukee plant put on a night shift, and about the same time the plant of the Seaman Body Corporation, which builds Nash enclosed bodies exclusively, was operating night and day. Many of the departments in the Seaman plant run not only night and day, but Sunday as well.

NEW CHASSIS BY GRAHAM

DETROIT, Nov. 29.—Graham Brothers have brought out a new 124 in. wheelbase chassis designed especially for use with dump bodies, with 34x5 in. front, 36x6 in. pneumatic tires rear on wood wheels. The price is \$1400. A special road builders model is also offered at \$1470 with 30x5 front and 34x7 in. pneumatic tires rear on steel spoke wheels. Flat gravity, hopper gravity and hydraulic hoist types of dump bodies may be had with his chassis. To decrease the length of the frame back of the axle, the rear springs are of the double quarter-elliptic cantilever type.

Just a Little Slow in the Generator

SAN ANTONIO, Tex., Dec. 1.—Could anybody believe there is still a man in America who does not know what gives power to a motor car? Anyhow, William Steinhardt, of the Crockett Automobile Co., Hudson dealer, declares he ran into just such a specimen.

The man was sold a car and given considerable instruction as to its operation. He was told the purposes of the magneto, generator, battery, etc. A few days later he called up the company and complained that something was wrong with the car. He couldn't make the thing go. Repair men hastened to the scene to find that the car was out of gasoline. When given this information the owner replied blankly: "I thought it ran on the magneto."

Plain Clothes Speed Officers Object of Campaign by A. A. A.

WASHINGTON, Dec. 1.—The American Automobile Association, through its national headquarters here, has announced its intention of waging a relentless campaign against the practice of city authorities in the use of plain clothes officers in making arrests of automobile speeders. The national organization is notifying all affiliated clubs that it will support them in their individual fights against such practice, which it characterizes as "the espionage system."

The A. A. A. summarizes its reasons for opposing the "espionage" system as follows:

Espionage presupposes the motorist a criminal.

It also encourages fatalities through obvious confusing of police with highwaymen and grafting constables.

It has never been necessary to put out plain clothes men to catch speeders.

Detective methods are necessary only for violations which are not done in public.

Uniforms are a protection to the motorist public as well as to the police force.

The uniform has a very deterrent effect upon would be violators. It is more important to discourage a motor violation than to make an arrest after something has happened.

SPECIALTIES CONCERN CHARTERS

OSHKOSH, Wis., Nov. 29.—Automotive equipment specialties will be manufactured on a sizable scale at Oshkosh, Wis., by the newly organized Oshkosh Auto Side Wings Co., which has been incorporated with \$10,000 initial capital by C. A. Joachim, R. K. Mosman and L. A. Hotchkiss.

Minimum Weight for Europe's 1926 Races Cut to 1212 Lbs.

**Rule Agreed Upon Provides for
Two-Seated Bodies and Two
Men on Car**

PARIS, Nov. 20 (By Mail).—Minimum weight under the 91½ cubic inch piston displacement rule which Europe has decided to adopt in 1926 was reduced to 1212 pounds at the last meeting of the International Sporting Commission held in Paris. This rule provides for two-seater bodies and two men aboard, the seats being side by side, or having a stagger of not more than 8 inches. The delegates of the Automobile Club of America, who acted as spokesman of the United States, did not propose single seater racing bodies, and although Italy was in favor of this change, she got no support from the others.

In order to allow American racing cars to compete in Italian events, the Italian Club intends to admit single seater machines on condition that they carry 132 lbs. of ballast, equivalent to the weight of a mechanic, thus allowing single and two-seater cars to race side by side. The Italian Club has authority to make this change in its own country, although the international rules provide for two seaters.

The 1926 European Grand Prix will be organized by Spain. This, however, will not prevent other European countries conducting their annual international races for 91½ inch cars. Only a fortnight intervening between the European Grand Prix in Belgium and the French Grand Prix near Paris, the probabilities are that there will be few entries for the former. It is already practically certain that Alfa-Romeo, winner of this year's European Grand Prix, will not start in the Belgian race.

LIQUIDATING OLD RAINIER CORP.

NEW YORK, Nov. 29.—Rainier Trucks, Inc., successor to the Rainier Motor Corp. is proceeding with the liquidation of the old company through the collection of accounts and bills receivable and through the purchase of such inventory as is needed for the manufacture of trucks. It is expected that the affairs of the Rainier Motor Corp. will be wound up in a reasonably short time. All remaining assets after the liquidation become the property of Rainier Trucks, Inc., without further payment.

The capital for the new company was provided by the Rainier Securities Corp., managers of the underwriting syndicate of \$250,000 of preferred stock. This stock is being offered to the public at par with a bonus of 2 shares of common with each share of preferred.

The officers and directors of the new company are as follows: J. T. Rainier, president; J. A. Rainier, vice-president and treasurer; Paul N. Lineberger, vice-president and secretary; George W. Loft, E. T. Bedford, 2nd, and Albert McDonald, directors.

Very Satisfactory Business Next Year, Believes Chrysler

**Head of Manufacturing Organization
Sees no Reason to Expect
Lower Car Prices**

NEW YORK, Dec. 1.—"In my opinion," says Walter P. Chrysler, president and chairman of the board of directors of the Maxwell and Chrysler companies, in a statement issued on conditions, "business for the year 1925 will be satisfactory, and, as far as the motor car industry is concerned in the face of the rising material market, prices of cars cannot be lowered."

Continuing, he says:

"The automotive industry is moving cautiously. Young industry that it is, it has made mistakes and wise that it is, too, it is profiting by its mistakes. The industry like other industries has overproduced. That will be guarded against in the future. The industry has been the folly of indiscriminate price cutting which was not based upon scientific estimates of costs and reasonable profits. It has learned that a policy which requires dealers to take more cars than they can sell is unwise."

Make Bonfire of Worthless Cars

BIRMINGHAM, Ala., Dec. 1.—The Birmingham Motor Trades Association recently held bonfire of used cars which were judged to be completely useless and unsaleable. Twenty-five cars were burned in the first lot and, according to T. B. McCarty president of the association, there will be other bonfires when more cars are adjudged useless and unfit for sale.

PROFITS LESS THAN 1923

TORONTO, Ont., Dec. 1.—In its statement for the year ended Sept. 30, 1924, the Goodyear Tire & Rubber Co., of Canada, Ltd., shows gross profits before providing for depreciation, but after taxes, of \$1,275,378, as against \$1,522,361 in 1923. After dividend payments of \$600,738 surplus for the year was \$236,996.

Profits for the year were equal to 16.86 per cent on the \$4,500,000 of 7 per cent preferred shares outstanding, compared with 18.34 per cent last year.

Promoters Promise \$500,000 Motor Course in Maryland

**Say Plans Call for Two Major Racing Events Annually,
Summer and Fall**

WASHINGTON, Nov. 24.—Plans for the construction of a fast automobile speedway to be built at Laurel, Md., midway between this place and Baltimore, have been completed and construction will begin on March 1, according to an announcement by a group of prominent automobile men of the two cities. The total outlay of expenditure will be \$500,000 and the promoters expect to hold their first race on July 4.

The project is headed by William C. Thomas, Baltimore automobile man, who will be general manager of the speedway. The company, known as the Baltimore-Washington Speedway, Inc., with executive offices in the Hearst Tower Building at Baltimore, is incorporated for \$1,000,000. Its incorporators are Williams E. Schloegel, Earle W. Blackburn and E. Seymour Parks.

The track will be 50 ft. wide, with straightaways approximately 800 ft. long, banked approximately 750 ft. triple radius curves, built on a 45 degree angle. The floor will be made of 2-by-4 lumber laid on edge, nailed to 2-by-12 joists.

Two grandstands, to seat 30,000, will be built, it is said, with subways beneath to permit infield parking. Construction work will be under Jack Prince, president of the Prince Automobile Speedway Construction Company of Oakland, Cal., the originator of board speedways for automobile racing and the builder of tracks at Los Angeles, Fresno, Kansas City, Altona, and the recently opened Charlotte track.

Two national major automobile events are planned each year, one in the summer, the other in the fall. The July 4th event, it is promised, will be of 250 miles for a purse of \$25,000.

INVITE MEXICANS TO SHOW

NEW YORK CITY, Dec. 1.—Invitations have been extended by the National Automobile Chamber of Commerce to 20 of the leading motor transportation authorities of Mexico to form a Mexican commission to visit the Silver Jubilee Automobile Show, which will be held in New York, Jan. 2-10. This move to promote further trade relations between the two countries is in appreciation of the cordial welcome which was accorded by Mexico to the American Industrial Commission which visited there this fall.

While the visitors are here, they will have an opportunity to meet with highway authorities and investment bankers of the United States and discuss with them practical means of developing and financing road construction in Mexico. They will also confer on merchandising problems with recognized leaders in this country.

25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of Dec. 7, 1899)

New Duryea Company

A dispatch from Peoria states that incorporation papers of the Duryea Motor Co. were filed in New Jersey on Nov. 28. The capital stock will be \$1,000,000, of which \$100,000 will be 6 per cent preferred stock. The company has purchased the patents of the Duryea Mfg. Co. of that city. Henry Crowther of New York City is president and Charles E. Duryea vice-president and chief engineer. All the stock has been underwritten. The company will erect a large factory in the east in addition to the one in Peoria.

Automobiles in Shanghai

In response to an inquiry from a motor vehicle firm in Chicago, Consul General Goodnow writes from Shanghai as follows:

"This is an ideal place for motor vehicles. The town, built on alluvial deposit in the mouth of the Yangtze river, is level. The roads are macadamized, and the climate is such, especially in summer, that everybody drives. The horses are small, about the size and character of our Indian ponies. The foreigners are comparatively few (say 5,000 men, women and children); but there are nearly 500,000 Chinese in the settlements, and these take very kindly to our mechanical inventions as soon as they see them. Shanghai, also, is the distributing point for central and north-

ern China. The merchants from the other treaty ports come here to buy their goods. Arrangements should be made to show vehicles, and to make a practical everyday demonstration of their ease of management and durability.

The Chinese will not buy goods without having seen them. The average Chinese has seen so few things that it is not easy for him to exert his imagination. Foreigners here are also slow to buy motor vehicles. The prices are considered high, and many think of the vehicle as experimental playthings. Neither the foreigners nor the Chinese can be induced to buy by descriptions or catalogues. There have been one or two automobile motors shown here, but they were of an inferior type and manifestly unfit for either use or pleasure.

Notes of Interest

Postmaster Hess of Indianapolis has joined the number of postal authorities who are enthusiastic over the subject of the automobile for handling the mails. He has been endeavoring to get the Washington authorities to permit him to carry on experiments at the Hoosier capital.

The English Motor Car Club held a run from London to Brighton recently. The distance is 52 miles, over good roads. More than 115 automobiles started. They included phaetons, buses, cabs, wagonettes and even the 1¼-h. p. tricycle was represented.

Aid In Timber Conservation Pledged By Motor Industry

Spokesmen for Automotive Field Assure Conference of Full Cooperation in War on Waste

WASHINGTON, Nov. 29.—Urging a specific program of timber conservation, President Coolidge last week addressed the National Conference on Utilization of Forest Products and sounded a warning that the nation faces timber exhaustion. To a large extent timber waste is unnecessary, he declared.

The automobile industry, because of its position near the top of the list as one of the largest users of lumber, was represented at the conference by manufacturers and representatives of the National Automobile Chamber of Commerce.

J. Walter Drake, Assistant Secretary of the Department of Commerce, who spoke as a representative of the government, told the delegates what the government seeks to do to eliminate waste in various industries, and particularly what the Department of Commerce, with the aid of the industry itself, had accomplished in standardization and simplification of lumber sizes and nomenclatures.

R. E. Brown of the Fisher Body Corporation said the automobile industry could standardize many things to assist in conservation of timber.

In discussing the part that the automobile industry can play in the conservation movement, Alfred H. Swayne, vice-president of General Motors Corp., declared that the industry stood ready to do anything within its power to aid in the elimination of lumber waste. The reason we are here today is to indicate to this conference, our willingness to do this, as signified by our presence.

HAZARD GOES WITH DAVIS

MOLINE, Ill., Dec. 1.—Lee H. Hazard, formerly production manager of the Velie Motors Corp., has accepted a position as factory manager for the Davis Motor Car Co. of Richmond, Ind. He is to assume his new duties immediately. Mr. Hazard was with the Velie organization for 15 years. He is a graduate of the University of Illinois, College of Engineering.

INCORPORATE MOTOMART

TOLEDO, O., Dec. 1.—The Toledo Motomart, Inc., has been chartered with a capital of \$25,000 to buy and sell new and used automobiles. Incorporators are Joseph O. Eppstein, Doris L. Carl, P. F. Tassie, Louis Swaab and Edward D. Murphy.

A. O. ROBERTS JOINS VELIE

MOLINE, Ill., Dec. 1.—Arthur O. Roberts of Detroit has been appointed assistant advertising manager of the Velie Motors Corp. He was formerly identified with the sales promotion and advertising departments of the Maxwell-Chrysler organization.

11,080 Vehicles Seized by Agents

WASHINGTON, Dec. 1.—A total of 11,080 automobiles and trucks comprise the automotive vehicle seizures of the federal government, taken during the past three years, in the enforcement of the national prohibition act. The annual report of Prohibition Commissioner Haynes, shows that from the sale of these confiscated automobiles a total of \$1,440,000 was realized, or an average of \$130 per vehicle.

Under the rules of the prohibition department most automobiles are sold by individual auction, although in cases of larger lots of cars and trucks—as in quarterly sales—the sale is made by "blind bidding." Under such practices expensive automobiles have been bid in for as low as \$10, while other "blind bids" have brought big sums for old cars.

London Show Biggest Success in its History, Consul Reports

WASHINGTON, Dec. 1.—The London Auto show, held during the last of October, proved to be the biggest success in the history of the show, from a standpoint of interest and new business secured, says a cable to the Department of Commerce from the American consul at London. Many British manufacturers report they have sufficient orders booked to carry them through the next motoring year.

The international character of the exhibit displayed many foreign, particularly American make of cars. The trade was reported good with a stimulus to the industry for the coming year. British prices are now reduced to closer competitive basis with foreign cars and as a result of the outlook one plant (The Morris), is planning a production of 40,000 cars in 1925, being nearly double previous yearly output.

HAVE CRANKSHAFT EXCHANGE

DETROIT, Mich., Dec. 1.—The Lincoln Motor Co. has inaugurated an exchange policy on crankshafts under which the dealer can turn in a worn shaft and secure in return a unit reground .02 in. undersize. The cost of the reground shaft to the customer is \$15 exclusive of labor for installation and undersize bearings. Only such crankshafts are exchanged on this basis as will clean up when reground to .02 in. undersize.

RETAILERS CHARTER

FROSTBURG, Md., Dec. 1.—The Frostburg Nash Co., 68 Washington street, Frostburg, Md., has been incorporated with \$25,000 capital stock by Alva Morton, Fred Earl Kreitzburg and James Henry Hanson.

Three New Factory Branches to Operate at Indianapolis

Stutz Motor Car Company, Lexington and Pilot Arrange for Direct Connections

INDIANAPOLIS, Nov. 17.—Three new factory branches have been established or announced here recently. The Stutz Motor Car Company took over the local sales and distribution of Stutz cars which has been handled for several years by the Updyke Auto Company. A special retail and branch sales department has been established in the Stutz factory which will handle all local and territory sales.

The Pilot Motor Car Company has also established a direct factory branch here with large quarters in the rooms where the Pierce-Arrow was distributed for years by the O'Brien Company. That company has now moved farther up town and is next door to the Marmon branch. The Lexington Motor Car Company has also taken over direct management of the local distributing and will continue the branch business where the Lexington has been located for years.

JACKSON LEAVES LOCOMOBILE

NEW YORK, Nov. 29.—Edwin R. Jackson has resigned as vice-president and general manager of the Locomobile Co. of America, Inc., a subsidiary of Durant Motors, Inc., and has been succeeded by George E. Daniels. Prior to coming with Durant Motors, Mr. Jackson was vice-president of the Willys-Overland Co. at Toledo and previously was president of the Packard Motor Car Co. of New York. Mr. Jackson has made no announcement of his future plans.

NEW ONES FOR REX SALES

CHICAGO, Dec. 1.—The Rex Sales organization, 6919 Stony Island avenue, has been appointed distributor for Cook County to two automobile accessories—999 Polish, manufactured by the Damon Mfg. Co., of Chicago, and Loxtite Radiator Cement, manufactured by Scientific Laboratories, Chicago. B. Janota is manager of the sales agency.

ESTABLISH REO BRANCH

SAN ANTONIO, Tex., Dec. 1.—The Reo Motor Company has established a branch in San Antonio, Texas, with W. P. Bates in charge. A full line of Reo cars and trucks and a full line of parts are carried in the new house which is supplying Southwest Texas.

CELEBRATE BIRTHDAY

BIRMINGHAM, Ala., Nov. 29.—The Edwards Motor Company, of Birmingham recently observed its eighth birthday as distributors of the Chevrolet Car in Birmingham.

With the Associations

PLAN CAROLINA SHOW

CHARLOTTE, N. C., Dec. 1.—The fifth annual Carolina automobile show will be held February 9-14 at Made-in-Carolina exposition building it was announced at a luncheon of the Automotive Merchants' Association. The following committees were named:

Central—B. D. Heath, chairman, J. P. Harris and George F. Wilson Jr. Building—Lee A. Folger, chairman, H. L. McClaren and Fred Anderson. Program and Entertainment—J. P. Harris, chairman, Victor Shaw and Thomas Tibbatts. Space—L. D. Templeton, chairman, C. L. Etheredge, H. C. Worrall and W. T. Hoppe. Decoration—H. D. Horton, chairman, H. S. Dowling and Fred Anderson. Publicity and Advertising—J. G. Fitzsimons, chairman, W. A. Masterman and L. W. Trexler. Ticket—J. D. Woodside, chairman, J. H. Huntley and T. D. Hallemann. Parking—J. C. McDonald, chairman, Tom Glasgow and J. T. Ham.

The Carolina automobile show is considered the most important motor event in the two Carolinas. It is usually held just as spring is breaking and opens up an active market in the business.

ELECT OFFICERS

BALTIMORE, Md., Dec. 1.—The Garage and Accessories Dealers' Association of Maryland held its annual election in this city recently. William H. Claire was elected president; Yewell W. Dillehunt,

vice-president; Martin R. Myers, secretary, and Philip J. O'Brien, treasurer. W. H. Thomas, Meyer Landay and Joseph Vaeth were elected members of the Board of Directors.

The association has made remarkable growth in the last year. It now has a membership of 235 in Baltimore city and four of the counties. During the coming year it is planned to extend the association into every county of the state.

ASSOCIATION REORGANIZES

WINNIPEG, Man., Nov. 29.—A meeting was held recently of the Winnipeg Motor Trades Association. A reorganization was put in force and a few minor charges made the constitution and by-laws of the association. An executive committee was chosen which was empowered to select from its members a president and vice-president. C. A. Emmett, was retained as secretary-treasurer. The following were selected as members of the executive committee: W. Kichley, W. Richardson, C. L. McLaughlin, F. E. H. Luke, W. Sarner, and J. Kirbin.

WANT MORE MEMBERS

OAKLAND, Cal., Dec. 1.—Plans to inaugurate a campaign to boost the membership of the Eastbay Garage Own-

ers' Association were outlined at a meeting held here recently. President H. Henderson presided and introduced H. D. Little, past president of the San Francisco Garage Owners' Association, who told of the work that organization has done. Other speakers included John Lloyd, L. C. Fraser, Frank Elliott, John Eames, Harold Knudsen and T. A. Stevenson.

DALLAS DEALERS ELECT

DALLAS, Texas, Nov. 29.—Frank H. Stephenson was elected president of the Dallas Automotive Trades Association at the annual meeting. C. R. Nachtrieb was elected vice-president and W. E. Brown, secretary-treasurer. W. C. Lemmon and John E. Morris were named directors for the two year term.

J. H. Shelton is the retiring president.

BISHOP HEADS ASSOCIATION

BALTIMORE, Md., Dec. 1.—A. H. Bishop has been re-elected president of the Baltimore Automobile Trade Association, Inc. Other officers elected are as follows: vice-president, E. T. Backus; treasurer, Walter F. Kneip; member of the board of directors, A. Stanley Zell. John E. Raine is executive secretary.

Coming Motor Events

Automobile Shows

Baltimore.....	Jan. 17-24
Nineteenth Annual Automobile Show, Baltimore Automobile Trade Association	
Birmingham, Ala.....	Dec. 1-6
Dixie Automobile Show, Municipal Auditorium, under the auspices of Birmingham Motor Trade Association, G. P. Caldwell, Secy.	
Boston.....	March 7-14
Annual Show, Boston Automobile Dealers' Association, Chester I. Campbell, manager.	
Charlotte, N. C.....	Feb. 9-14
Fifth Annual Carolina Automobile Show, B. D. Heath, Chairman Central Committee.	
Brooklyn.....	Jan. 17-24
Annual Automobile Show Brooklyn Motor Vehicle Dealers Ass'n.	
Chicago.....	Jan. 23-31, 1925
National Automobile Chamber of Commerce.	
Chicago.....	Jan. 26-31
Twenty-fourth Annual Automobile Show, Philadelphia Automobile Trade Association, Commercial Museum.	
Cincinnati.....	Jan. 10-17
Cincinnati Automobile Show, Music Hall Auditorium, under the auspices of Cincinnati Automobile Dealers Association.	
Cleveland, O.....	Jan. 17-24
Annual Show, Cleveland Automobile Manufacturers' and Dealers' Assn. Public Auditorium, Herbert Buckman, Manager.	
Des Moines, Ia.....	Feb. 22-28
Annual Automobile Show Under Auspices of Des Moines Automobile Dealers Assn.	
Detroit.....	Jan. 17-24, 1925
Detroit Automobile Show, Detroit Dealers' Association.	
Kansas City, Mo.....	Feb. 7-14, 1925
Kansas City Motor Car Dealers' Association Show.	
Newark, N. J.....	Jan. 10-17, 1925
Eighteenth Annual Automobile Show, under the auspices of the New Jersey Automobile Exhibition Co., Chamber of Commerce Building. Claude E. Holgate, Manager.	
New Bedford, Mass.....	Jan. 28-31, Inc.
Annual Automobile Show given by New Bedford Trade.	
New York.....	Jan. 2-10, 1925
National Automobile Chamber of Commerce.	
Omaha, Neb.....	Feb. 16-21, 1925
Twenty-fourth Annual Omaha Automobile Show.	
Philadelphia.....	Jan. 10-17, 1925
Twenty-fourth Annual Automobile Show, Philadelphia Automobile Trade Association, Commercial Museum.	
Pittsburgh, Pa.....	Jan. 31-Feb. 7, 1925
Twenty-ninth Annual Automobile Show, Motor Square Garden, under the auspices of the Automotive Association, Jno. J. Bell, Manager.	
Portland, Ore.....	Jan. 31-Feb. 6
Annual Automobile Show, Multnomah Block, under the auspices of the Automobile Dealers' Association of Portland; Ralph J. Staehli, manager.	

San Francisco.....	Feb. 21-28, 1925
Ninth Annual Pacific Automobile Show, Exposition Auditorium, under auspices Motor Car Dealers' Association of San Francisco. G. A. Wahlgreen, Manager.	
Washington, D. C.....	Jan. 24-31
Annual Show to be held on both floors of Convention Hall under auspices Washington Automotive Trade Association. Rudolph Jose, Chairman Show Committee, 1138 Connecticut ave., Washington, D. C.	

Foreign Shows

Berlin.....	Dec. 4-14
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Conventions

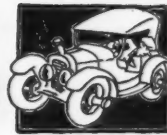
Chicago.....	Jan. 26-29, 1925
Eighth Annual Convention, N. A. D. A., Hotel LaSalle.	
Columbus, O.....	Dec. 10-11
Ohio Automotive Trade Association's annual convention.	
Detroit.....	January
Annual Meeting of the Society of Automotive Engineers.	
Montgomery, Ala.....	Jan. 26, 1925
Annual Convention, Alabama Automotive Trades Association.	
New York City.....	Jan. 7, 1925
New York Show. Convention N. A. D. A., Hotel Commodore.	

Races

Los Angeles, Cal.....	Dec. 7
Los Angeles Speedway Association—250 miles, Culver City track.	



SQUEEKS *and* RATTLES



Every now and then you run across a fellow who refuses to use a road map. He lets his conscience be his guide. And of course he gets lost.

Absent-mindedness is responsible for many traffic accidents. However, no improvement may be expected until the cross-word puzzle mania has run its course.

It's about as hard to keep a car from skidding on wet clay roads as it is to induce many lazy drivers to get out and put on the chains.

**Mighty tough about Old Man Shank
He drove his car down the gangplank,
Lickety-Splitting it for fair;
And you know what? No boat was there.**

Rear view mirrors have been indorsed by everybody now but the billing and cooing couple in the back seat.

Two slick-maned sheik drivers collided in South Chicago one night recently, but it hasn't been learned whether one of them failed to dim his headlights or merely had his hat off.

According to a noted legal authority ambulance chasing is on the decline. The reason for this is that most ambulances are motorized and they move goshdarned fast.

A RAILROAD CROSSING

Is where
Many new
ANGELS
Get their start.

An umbrella holder is one of France's latest offerings in the way of motor car equipment. Well—just so it has a good locking arrangement.

"I'm a chauffeur and I'm hunting a job. I saw your ad."

"Are you a careful driver?"

"Very careful, sir."

"What references can you give?"

"My last two employers."

"And where can they be reached?"

"One of them is at St. Luke's hospital, sir, and I think the other was just taken to St. John's."

When you solicit Christmas gift business on behalf of the dashing divorcee, don't talk accessories at all. She would be more interested in a replacement.

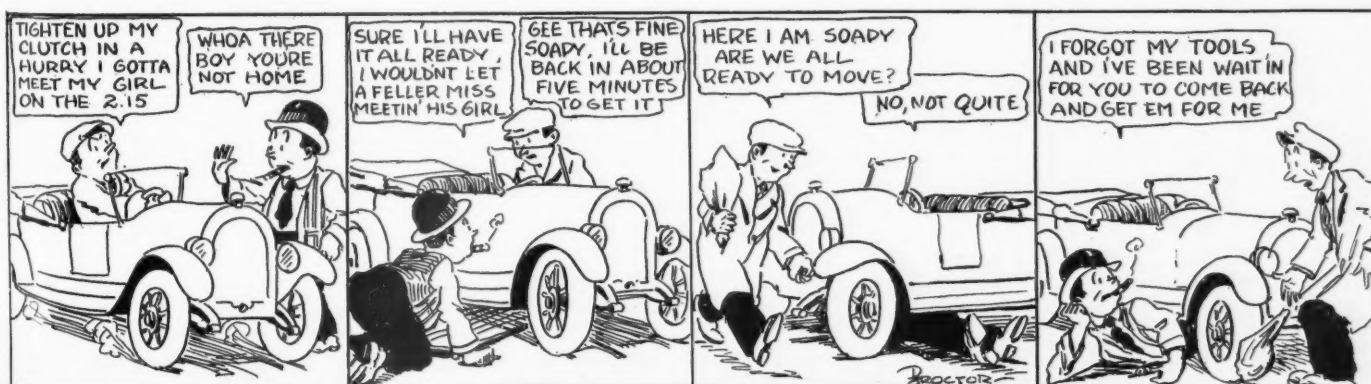
Incorporate It, Quick!

HOLD-UP—"Stick 'em up—an' hold 'em there! I'm going to take every used car you have in this place."

DEALER—"Thank heavens, the problem is solved."

"American Can Enriches Baker and Associates," announces a head line. Hope that is a sign of good omen for automobile dealers.

Service at Soapy's



Prices and Weights of Current Passenger Car Models

Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price
AMERICAN "D-66"					"Y"					DORRIS "6-80"					GRAY "O"				
2985	2-p		Roadster	\$1,950	3950	7-p		Touring	2,475	4120	4-p		Pasadena Tour.	\$4,150	1755	5-p		Touring	\$630
3175	4-p		Sp. Roadster	2,050	4320	7-p		Sedan	3,325	4115	7-p		Touring	3,950	1785	2-p		Coupe	750
3260	5-p		Touring	1,695	CHANDLER "SS"					4198	4-p		Coupe	4,985	1880	3-p		Coupe	845
3300	5-p		Sport	1,850	3090	2-p		Roadster	\$1,795	4200	5-p		Sedan	5,550	2080	5-p		Sedan	895
3310	7-p		Touring	1,760	3132	4-p		Roadster	1,785	4310	7-p		Sedan	5,800	2130	5-p		Sport Sedan	995
3190	4-p		Sp. Touring	1,885	3084	5-p		Touring	1,585	DUSENBERG					2130	5-p		Sp. Sedan	995
3470	7-p		Sedan	2,550	3223	7-p		Touring	1,735	St. "8"					HCS				
3310	5-p		Brougham	2,195	3284	4-p		Royal Dispatch	1,885	3920	3-p		Roadster	\$6,500	"6"				
ANDERSON "41"					3309	5-p		Chummy Sedan	2,045	3700	5-p		Phaeton	6,250	3750	4-p		Touring	\$2,650
2650	5-p		Touring	\$1,195	3469	5-p		Met. Sedan	2,195	3920	7-p		Phaeton	6,750	3950	4-p		Coupe	3,350
2675	4-p		Sp. Touring	1,445	3428	5-p		Sedan	1,995	3980	4-p		Sp. Phaeton	6,500	4010	4-p		Sedan	3,350
2925	2-p		Coupe	1,425	3521	7-p		Sedan	2,195	4000	4-p		Coupe	7,500	HATFIELD				
2875	5-p		Sedan	1,695	3598	7-p		Limousine	3,095	4350	7-p		Sedan	7,800	"6-55"				
2925	5-p		Sp. Sedan	1,895	CHEVROLET					DU PONT "C"					3080	4-p		Sport Touring	\$1,775
"50"					"Superior"					3300	2-p		Roadster	\$2,990	3225	4-p		Coupe	2,175
2975	7-p		Touring	1,595	1690	2-p		Roadster	\$495	3400	5-p		Touring	2,090	3300	5-p		Sedan	2,350
3200	7-p		Sedan	1,945	1790	5-p		Touring	510	3600	5-p		Touring Sedan	3,050	HAYNES "60"				
APPERSON "6"					1955	5-p		Phaeton DeLuxe	640	3600	5-p		Suburban Sedan	3,050	3295	5-p		Touring	\$1,600
3100	5-p		Sp. Phaeton	\$1,695	2005	4-p		Coupe	725	DURANT "A-22"					3725	5-p		Sedan	2,300
3145	3-p		Coupe	1,985	1880	2-p		Utility Coupe	640	2235	2-p		Roadster	\$1,080	3560	5-p		Brougham	2,200
3230	5-p		Sedan	2,095	2070	5-p		Coach	695	2325	5-p		Touring F.W.B.	890	HUDSON				
3470	5-p		Sp. Sedan	2,295	2070	5-p		Sedan	795	2345	5-p		Sp. Touring	1,140	"Super Six"				
"8"					2070	5-p		Sedan DeLuxe	940	2405	2-p		Business Coupe	1,035	3300	4-p		Speedster	\$1,400
3815	5-p		Phaeton	2,485	CHRYSLER (112 1/2 in. W. B.)					2495	4-p		Coupe	1,340	3425	7-p		Phaeton	1,500
3900	7-p		Phaeton	2,535	2805	4-p		Roadster	\$1,625	2605	5-p		Spec. Coupe	1,410	3450	5-p		Coach	1,345
3955	5-p		Sport Phaeton	2,800	2730	5-p		Touring	1,395	2770	5-p		Spec. Sedan	1,550	3585	5-p		Sedan	1,795
3815	7-p		Sport Phaeton	2,900	2785	5-p		Phaeton	1,495	2550	5-p		Coach	1,185	3675	7-p		Sedan	1,895
4180	5-p		Sedan	2,485	2985	4-p		Coupe	1,895	ELCAR "4-40-41"					HUPMOBILE "R"				
4200	7-p		Sedan	3,585	3060	5-p		Sedan	1,825	2560	5-p		Touring	\$995	2595	2-p		Roadster	\$1,225
4340	5-p		Sport Sedan	3,750	3085	6-p		Imperial Sedan	2,065	2585	5-p		Demi Sp. Touring	1,095	2730	5-p		Touring	1,225
4380	7-p		Sport Sedan	3,850	3090	5-p		Crown Sedan	2,195	2641	5-p		Sportster	1,195	2760	2-p		Coupe	1,450
AUBURN "6-43"					3995	5-p		Brougham	1,965	2779	5-p		Sedan 3 d.	1,295	2860	4-p		Coupe	1,595
2610	5-p		Special Touring	1,395	4188 1/2 in. W. B.)	5-p		Town Car	3,725	2900	5-p		Sedan	1,495	2975	5-p		Sedan	1,800
2760	5-p		Sp. Touring	1,465	CLEVELAND "43"					2981	5-p		Sp. Sedan	1,695	2895	5-p		Club Sedan	1,475
2900	5-p		Touring Coupe	1,695	2750	5-p		Touring	1,095	2779	5-p		Brougham 3 d.	1,265	JEWETT				
2900	5-p		English Coach	1,945	2810	5-p		Touring De Luxe	1,195	2829	5-p		Sp. Brougham 3 d.	1,395	2690	5-p		Touring	1,135
2885	5-p		Sedan	1,795	2830	3-p		Coupe	1,295	"6-50-51"					2810	5-p		DeLuxe Touring	1,290
"8-63"					2870	3-p		Spec. Coupe	1,395	2600	5-p		Demi Sp. Tour.	\$1,220	2880	5-p		Sedan	1,445
3225	5-p		Sp. Touring	1,895	3040	5-p		Spec. Sedan 4 d.	1,495	2690	5-p		Sp. Touring	1,420	3095	5-p		DeLuxe Sedan	1,745
3550	5-p		Sedan	2,550	3090	5-p		Sedan de Luxe	1,695	2779	5-p		Sedan 3 d.	1,495	2775	5-p		Brougham	1,395
3510	5-p		Brougham	2,395	2930	5-p		Brougham	1,545	2900	5-p		Sedan	1,720	2775	5-p		Sp. Brougham	1,525
3550	7-p		Sedan	2,550	COLE MASTER					2981	5-p		Sp. Sedan	1,920	JORDAN (120 in. W. B.)				
HARLEY "6" 6-50					3675	4-p		Volante Tour.	\$2,325	2779	5-p		Brougham	1,490	3420	5-p		Brougham 4 d.	\$2,385
2750	5-p		Touring	\$1,395	3795	7-p		West. Tour.	2,325	2829	5-p		Sp. Brougham	1,620	3375	4-p		Victoria	2,380
2800	5-p		Sp. Touring	1,495	3675	4-p		Aero-Vol. Tour.	2,475	"6-61"					(124 1/2 in. W. B.)				
3100	5-p		Sedan	1,850	4055	5-p		Bouquette Sedan	3,225	3380	5-p		Sedan	2,245	3260	4-p		Blue-Hov Touring	2,090
3150	5-p		Sp. Sedan	2,250	4000	7-p		Royal Sedan	3,225	3675	5-p		Sp. Sedan	2,395	Series "A"				
BUICK "Standard"					4100	7-p		Royal Limousine	3,325	3880	4-p		Brougham	1,995	3330	2-p		Playboy Road.	2,575
2750	2-p		Roadster	\$1,150	CUNNINGHAM					"8-80"					3340	5-p		Touring	2,575
2800	2-p		Roadster Encl.	1,190	"V-4"					3880	4-p		Brougham	1,995	3635	5-p		Brougham	2,875
2920	5-p		Phaeton	1,175	4600	7-p		Touring	\$6,300	3880	4-p		Brougham	1,995	3520	4-p		Victoria	2,775
2970	5-p		Phaeton Encl.	1,250	4500	4-p		Sp. Touring	5,800	3880	4-p		Brougham	1,995	3525	5-p		Sedan	2,975
3075	4-p		Coupe	1,565	4700	4-p		Coupe	7,150	FLINT "55"					KING (120 in. W. B.)				
3185	5-p		Dbl. Service Sedan	1,475	5000	6-p		Sedan	7,650	2305	5-p		Coach	895	3428	2-p		Sportster	\$1,995
3245	5-p		Regular Sedan	1,665	DAGMAR "6-70"					2305	5-p		Coach	895	3428	4-p		Foursome	1,795
3500	5-p		Coach	1,295	3800	4-p		Sp. Touring	\$3,500	3095	3-p		Sp. Roadster	\$1,630	3528	7-p		Touring	1,795
"Master (120 in. W. B.)					4200	4-p		Sedan	4,500	8145	5-p		Touring	1,495	3645	4-p		Coupe	2,200
3300	2-p		Roadster	\$1,365	DANIELS					8165	5-p		Sp. Touring	2,050	3875	5-p		Sedan	2,400
3455	5-p		Phaeton	1,395	"24-38"					8165	4-p		Sp. Touring	1,795	3400	5-p		Road King Sedan	1,495
3455	5-p		Phaeton Encl.	1,475	4150	4-p		Touring	\$6,800	8355	4-p		Coupe	2,095	3400	4-p		Sedanette	1,995
3675	4-p		Coupe	2,125	4765	7-p		Touring	6,900	8470	4-p		Sedan	2,185	(124 in. W. B.)				
3845	5-p		Sedan	2,225	4600	4-p		Sedan	7,600	2400	5-p		Touring	1,075	3428	2-p		Sportster	\$1,995
3500	5-p		Coach	1,495	5200	7-p		Sedan	7,800	2720	5-p		Brougham	1,640	3428	4-p		Foursome	1,795
(128 in. W. B.)					DAVIS "90"					ESSEX					3645	4-p		Coupe	2,400
3470	3-p		Sp. Roadster	\$1,750	2650	4-p		M. O'War Road.	\$1,495	2130	5-p		Touring	\$900	3875	5-p		Sedan	2,400
3605	5-p		Sp. Phaeton	1,800	2915	4-p		Legionaire Tour.	1,495	2305	5-p		Coach	895	3400	5-p		Road King Sedan	1,495
3645	7-p		Phaeton	1,625	2750	5-p		Phaeton	1,395	FLINT "55"					3400	4-p		Sedanette	1,995
3645	7-p		Phaeton Encl.	1,700	3070	5-p		Sedan	1,995	3095	3-p		Sp. Roadster	\$1,630	(124 in. W. B.)				
3940	5-p		Brougham Sedan	2,350	3065	5-p		Profile Sedan	1,995	8145	5-p		Touring	1,495	3428	2-p		Sportster	\$1,995
4020	7-p		Sedan	2,425	2700	5-p		Brougham	1,595	8165	5-p		Sp. Touring	2,050	3428	4-p		Foursome	1,795
4020	7-p		Sedan Limousine	2,525	"91"					8165	4-p		Sp. Touring	1,795	3645	4-p		Coupe	2,400
4020	7-p		Town Car	2,925	2835	4-p		Roadster	1,795	8355	4-p		Coupe	2,095	3875	7-p		Sedan	2,625
ADILAC "V-63"					3020	5-p		Phaeton	1,695	8470	4-p		Sedan	2,185	3400	7-p		Road King Sedan	1,795
4190	4-p		Roadster	\$3,185	3245	5-p		Sedan	2,295	FORD					5-p		Sedanette	2,295	
4280	7-p		Touring	3,185	3050	5-p		Brougham	1,895	Without Starter and Dem. Rims					KISSELL				
4200	4-p		Phaeton	3,185	3215	5-p		Berline Sedan	2,295	1395	2-p		Runabout	\$265	2980	5-p		Phaeton Std.	1,685
4610	7-p		Sedan	3,585	DODGE BROTHERS					1517	5-p		Touring	295	3170	5-p		Phaeton DeLuxe	1,885
4880	4-p		Victoria	3,275	2494	2-p		Roadster	\$865	With Starter and Dem. Rims					3190	5-p		Tourster	2,000
4475	5-p		Landau	3,650	2653	2-p		Spec. Roadster	965	1540	2-p		Runabout	\$350	3130	2-p		Speedster	2,185
"Custom Built" (132 in.)					2591	5-p		Touring	895	1662	5-p		Touring	380	3530	2-p		Enc. Speedster	2,175
4260	2-p		Coupe	3,975	2755	5-p		Spec. Touring	995	1772	2-p		Coupe	525	3430	4-p		Coupe	2,580
4400	5-p		Coupe	4,350	2865	2-p		Coupe "B"	1,035	1950									

Prices and Weights of Current Passenger Car Models

Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price
LINCOLN					OLDSMOBILE					REVERE					Special Six				
4050	2-p		Roadster	\$4,000	2145	2-p		Roadster	\$875	3700	2-p		Roadster	\$3,200	3065	3-p		Du. Roadster	1,450
4290	7-p		Touring	4,000	2270	2-p		Sp. Roadster	985	3500	4-p		Speedster	3,200	3475	5-p		Du. Phaeton	1,495
4215	4-p		Phaeton	4,000	2200	5-p		Touring	875	3800	5-p		Touring	3,200	3675	4-p		Victoria	2,950
4380	5-p		Coupe	4,600	2360	5-p		Sp. Touring	1,015	4300	5-p		Sedan	4,000	3855	5-p		Sedan	2,150
4375	4-p		Sedan	4,800	2330	2-p		Bus. Coupe	1,045	RICKENBACKER					Big Six				
4600	5-p		Sedan	4,900	2460	4-p		Coach	1,065	"C"					3785	7-p		Du. Phaeton	1,875
4660	7-p		Sedan	5,100	2410	5-p		Coupe	1,175	2815	3-p		Sp. Roadster	\$1,645	4030	5-p		Coupe	2,650
4720	7-p		Limousine	5,300	2410	5-p		Coach	1,065	2880	5-p		Sp. Touring	1,595	4150	7-p		Sedan	2,785
LOCOMOBILE					2570	5-p		Sedan	1,250	3050	4-p		Coupe	2,095	4200	7-p		Berline	2,860
5080	4-p		Sportif Tour.	\$7,400	2740	5-p		DeLuxe Sedan	1,350	3160	5-p		Sedan	2,195	STUTZ				
5380	7-p		Touring	7,400	OVERLAND					"A"					3250	3-p		Roadster, On Appl.	
5600	5-p		Victoria Sedan	9,990	"91" (100 in. wheelbase)					3326	4-p		Sport Phaeton	\$2,195	3350	5-p		Touring, On Appl.	
5644	7-p		Brougham	9,990	1769	2-p		Roadster	\$530	3585	5-p		Sedan	2,795	3750	5-p		Sedan, On Appl.	
5640	7-p		Tour. Limousine	9,000	1863	5-p		Touring	530	ROAMER					"695"				
5868	7-p		Encl. Drive Lim.	9,990	1918	5-p		Touring DeLuxe	595	"6-54-E" (118 in. W. B.)					3900	5-p		Sportster, On Appl.	
5624	7-p		Cabriolet	10,250	2177	2-p		Coupe	695	3100	2-p		Roadster	\$2,685	3950	7-p		Touring, On Appl.	
McFARLAN					2130	5-p		Sedan	850	3100	4-p		Tourer	2,485	4150	5-p		Sedan, On Appl.	
4600	2-p		Roadster	\$5,400	2004	5-p		Coupe Sedan	585	3300	7-p		Touring	2,750	4350	7-p		Sedan, On Appl.	
4600	4-p		Sport Touring	5,600	PACKARD					3800	7-p		Touring	2,685	4450	7-p		Berline, On Appl.	
4700	7-p		Touring	5,700	"6" (126 in. W. B.)					4100	5-p		Spec. Sedan	\$4,250	TEMPLAR				
4900	4-p		Coupe	6,720	3165	4-p		Roadster	\$2,785	4200	7-p		Suburban-Sedan	3,950	3300	4-p		Suburban Tour.	\$2,175
5200	4-p		Tour. Sedan	6,720	3320	5-p		Touring	2,585	3650	4-p		"4-75-E"	3,650	3300	5-p		Phaeton	1,985
5200	7-p		Tour. Sedan	6,810	3255	4-p		Sp. Touring	2,750	"4-85-E"					3100	5-p		Sedan	2,785
5200	7-p		Sp. Sedan	6,600	3400	4-p		Coupe	3,275	3200	2-p		Spec. Speedster	3,785	3083	5-p		Brougham	2,650
5200	7-p		Sub. Sedan	7,000	3515	5-p		Coupe	3,450	ROLLIN					VELIE				
5100	7-p		Limousine	6,900	3565	5-p		Sedan	3,375	2300	5-p		Touring	\$995	2780	5-p		Touring	\$1,095
5200	7-p		Town Car	9,000	3610	5-p		Sedan Limousine	3,425	2315	3-p		Coupe Roadster	1,195	3110	5-p		Sedan	1,595
3700	3-p		Roadster	2,600	"6" (133 in. W. B.)					2425	3-p		Spec. Coupe	1,395	"60"				
4000	5-p		Touring	2,600	3430	7-p		Touring	\$2,785	2485	5-p		Sedan	1,295	2840	5-p		Touring	\$1,250
4860	4-p		Coupe	3,100	3690	7-p		Sedan	3,625	2595	5-p		Spec. Sedan	1,550	3025	5-p		Club Phaeton	1,425
4850	5-p		Sedan	3,100	3765	7-p		Sedan Limousine	3,675	ROLLS ROYCE					3340	5-6		Royal Sedan	1,925
4900	7-p		Sedan	3,200	"8" (136 in. W. B.)					4170	7-p		Sedan	3,985	3100	5-p		Sedan	1,675
MARION					3880	4-p		Runabout	3,850	Prices on application to Rolls-Royce Co. of America, Springfield, Mass.					3083	5-p		Coach Sedan	1,425
3470	2-p		Roadster	\$3,165	3890	5-p		Touring	3,850	STANLEY					"44"				
3575	5-p		Phaeton	3,165	4125	4-p		Coupe	4,550	3770	5-p		Phaeton	\$2,750	3050	5-p		Touring	\$1,690
3690	7-p		Touring	3,165	4200	5-p		Coupe	4,725	3910	7-p		Phaeton	2,750	3150	5-p		Spec. Touring	1,840
3770	5-p		Brougham Coupe	3,295	4270	5-p		Sedan	4,650	4075	5-p		Sedan	3,585	3300	5-p		Brougham 3 d.	2,290
3970	5-p		Sedan de Luxe	3,455	4275	5-p		Sedan Limousine	4,700	4170	7-p		Sedan	3,985	3550	7-p		Touring	\$1,990
3970	5-p		Sedan de Luxe	3,775	"8" (143 in. W. B.)					4275	7-p		Sedan	4,900	3650	7-p		Spec. Touring	2,190
4155	7-p		Sedan de Luxe	3,850	4020	7-p		Touring	\$3,850	STAR					3300	5-p		Sedan	\$2,190
4000	5-p		Sedan Limousine	3,900	4275	7-p		Sedan	4,900	1700	2-p		Roadster	\$540	WILLS SAINT-CLAIRE				
4100	7-p		Sedan Limousine	3,975	4350	7-p		Sedan Limousine	4,950	1790	5-p		Touring	540	"A-68" (121 in. W. B.)				
MAXWELL					3677	4-p		Phaeton	\$1,895	1800	5-p		Touring FWB	745	3240	3-p		Roadster	\$2,575
2135	2-p		Roadster	\$885	3742	7-p		Phaeton	1,895	1880	5-p		Spec. Touring	795	3320	5-p		Touring	2,475
2210	5-p		Touring	895	3880	4-p		Phaeton DeLuxe	2,095	1980	2-p		Coupe	750	3460	4-p		Coupe	3,275
2410	5-p		Sp. Touring	1,055	4300	7-p		Sub. Limousine	2,395	2115	5-p		Sedan	820	3630	7-p		Sedan	3,475
2255	2-p		Club Coupe	1,025	3900	5-p		Brougham 4 d.	2,175	2150	5-p		Spec. Sedan	1,090	3670	5-p		Imperial Sedan	3,575
2440	5-p		Club Sedan	1,095	4285	7-p		Sedan DeLuxe	2,770	STEARNS-KNIGHT					3500	5-p		Brougham	3,375
2695	5-p		Sedan	1,345	PEERLESS					3775	4-p		Coupe Roadster	\$1,795	3650	5-p		Limousine	3,850
2785	5-p		Trav. Sedan	1,585	"6-70"					4250	5-p		Sedan	2,095	3600	5-p		Town Car	3,850
MOON					3050	2-p		Roadster	\$2,350	3750	4-p		Coupe Brougham	1,895	"B-68" (127 in. W. B.)				
2440	5-p		Roadster	\$1,295	3175	5-p		Touring	2,285	3750	4-p		Coupe Brougham	1,895	3265	4-p		Roadster	\$2,875
2460	5-p		Sp. Touring	1,195	3525	7-p		Touring	2,485	"S" (6)					3335	5-p		Traveler	2,975
2605	5-p		Enc. Touring	1,270	3550	5-p		Sedan	2,995	3775	5-p		Touring	\$2,395	3500	7-p		Phaeton	2,875
2605	5-p		Sedan 2 d	1,495	3700	5-p		Coupe	2,950	3850	7-p		Touring	2,495	3495	4-p		Coupe	3,675
2765	5-p		Sedan 4 d	1,695	3900	7-p		Sedan	3,295	4025	2-p		Coupe	3,395	3625	5-p		Sedan	3,775
2765	5-p		Petite Sedan	1,785	Equipoised "8"					4275	4-p		Sp. Coupe	3,150	3635	7-p		Sedan	3,800
Newport					1300	5-p		Town Brougham	4,250	4275	5-p		Sedan	2,945	3570	5-p		Brougham 4-D	3,800
2760	5-p		Touring	1,495	4355	7-p		Sub. Sedan	4,450	4275	7-p		Sp. Sedan	3,395	3710	7-p		Limousine	3,990
2920	5-p		Sedan	1,815	4430	7-p		Berline Lim.	4,725	STERLING-KNIGHT					WILLYS-KNIGHT				
3090	5-p		Petite Sedan	1,915	4130	4-p		Victoria Coupe	3,950	3200	4-p		Sp. Touring	\$2,250	"64"				
Metropolitan					4732	5-p		Coupe	4,175	3285	5-p		Phaeton	2,150	2681	2-p		Roadster	\$1,275
2860	5-p		Touring	1,515	PIERCE-ARROW					3300	7-p		Touring	2,400	2768	5-p		Touring	1,295
3120	5-p		Sedan	1,995	4590	5-p		Touring	5,250	3450	5-p		Sedan	2,800	3062	3-p		Coupe	1,770
3190	5-p		Sp. Sedan	2,095	4780	8-p		Coupe	6,800	3550	7-p		Sedan	3,050	3115	5-p		Sedan	1,795
London					4960	7-p		Sedan	7,000	3450	4-p		Sp. Brougham	2,750	3111	4-p		Coupe Sedan	1,550
3270	5-p		Sp. Touring	1,985	4750	4-p		Coupe Sedan	6,900	4800	4-p		Brougham	2,475	3115	5-p		Coupe Sedan	1,650
3500	5-p		Petite Sedan	2,540	4780	6-p		Brougham	6,800	STEVENS-DURYEA					3167	5-p		Sedan DeLuxe	1,995
NASH					4850	7-p		Limousine	7,000	4200	2-p		Roadster	\$8,150	"67"				
2960	5-p		"Special" Touring	\$1,095	5060	7-p		Enclosed Lim.	7,000	4400	7-p		Touring	7,500	3059	7-p		Touring	1,425
3120	5-p		Sedan	1,295	4780	7-p		French Lim.	7,000	4250	4-p		Sp. Touring	7,750	3431	7-p		Sedan	2,095
"Advanced"					4782	6-p		Landaulet	7,000	4600	4-p		Coupe	9,000	TAXICABS				
3320	3-p		Roadster	1,375	"80"					4600	4-p		Sedan	10,000	Weight	Make and Model	Price		
3400	5-p		Touring	1,375	3385	7-p		Phaeton	\$2,895	4800	6-p		Sedan	9,673	3360	Checker	D-1	\$1,695	
3680	5-p		Sedan	1,695	3440	5-p		Sedan	3,895	4800	6-p		Town Brougham	10,175	4100	Checker		2,340	
"Advanced"					3625	7-p		Sedan	3,995	4800	6-p		Vestibule Limou.	9,675	2900	Checker		1,950	
3820	3-p		Roadster	1,375	3875	7-p		Enc. Drive Lim.	4,045	4800	7-p		3/4 Limousine	10,175	3415	Clear 4		2,100	
3400	5-p		Touring	1,375	"T-6"					3172	5-p		Sta. Touring	\$1,395	3590	Clear 6		2,450	
3680	5-p		Sedan	1,695	3182	5-p		Sport Touring	1,595	3225	4-p		Coupe	1,875	3775	H. C. S.		1,880	
OAKLAND					3225	4-p		Coupe	1,875	3300	7-p		Touring	2,400	3800	H. C. S.		1,880	
2420	3-p		Roadster	\$1,095	3515	5-p		Sedan 4 d.	1,595	3450	5-p		Sedan	2,800	3500	Kelsey E		1,925	
2610	3-p		Sp. Roadster	1,195	3695	5-p		Brougham 4 d.	2,235	4800	6-p		Sedan	9,673	3800	Premier 4A		2,890	
2485	5-p		Touring	1,095	"T-6"					3172	5-p		Sta. Touring	\$1,395	4200	Premier 4A		2,890	
2650	5-p		Sp. Touring	1,195	3182	5-p		Sport Touring	1,595	4800	6-p		Vestibule Limou.	10,175	4200	Premier 4A		2,890	
2620	3-p		Landau Coupe	1,295	3225	4-p		Coupe	1,875	4800	7-p		3/4 Limousine	10,175	4200	Premier 4A		2,890	
2720	4-p		Coupe	1,495	3515	5-p		Sedan 4 d.	1,595	4800	7-p		Cabriolet	1					

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

MAKE AND MODEL	Wheelbase (Ins.)	TIRES		Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Clutch Type and Make	Gear-set Make	Universal Joints Type and Make	REAR AXLE		BRAKES		Steering Gear Make	Rear Springs Type and Length	
		Standard Size (Ins.)†	Balloon Equipment															Type and Make	Gear Ratio†	Foot, Type and Location	Hand, Type and Location			Four-Wheel Brake, Type
American.....D-66	127	33x4½	No	H-Sp	91	6-3½x5	29.40	L	C	3	PS	Str	A-K	G-D	P-B&B	War	M-Har	F-Sal	5.10	E-R	I-R	None	Lav	S-57½
Anderson.....41	115	31x5.2	Yes	Cont	7U	6-3½x4½	23.44	L	C	4	PC	Zen	Wes	Wes	P-B&B	Dur	F-Thi	½ Sal	4.75	E-R	E-T	Mec*	Gem	S-58
Anderson.....50	122	32x4.9	Yes	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Zen	Rem	Rem	P-B&B	Dur	F-Uni	¾ Sal	4.50	E-R	E-T	Mec*	Gem	S-58
Apperson.....6	120	32x4	Yes*	Own	6	6-3½x4½	23.44	L	C	4	FP	Str	Rem	Rem	P-Roc	Mec	M-Thi	½ Col	5.10	E-R	I-R	Mec*	Lav	J-48
Apperson.....8	130	33x5	No	Own	8	8-3½x5	33.80	L	C	3	PS	Joh	Rem	Bij	D-Own	Mec	M-Thi	½ Own	4.25	E-R	I-R	Mec*	Own	J-48
Auburn.....6-43	114	31x4	Yes*	Cont	7U	6-3½x4½	23.44	L	C	4	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	½ Col	4.63	E-R	E-T	Mec*	Jac	S-57
Auburn.....8-63	124	32x6.2	Yes	Lyc	H	8-3½x4½	31.25	L	C	5	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	½ Col	4.63	E-R	E-T	Mec*	Jac	S-57
Barley.....6-50	118	32x4	No	Cont	7U	6-3½x4½	23.44	L	C	4	PC	Str	Del	Del	P-B&B	Ful	R-M&E	½ Col	5.11	E-R	I-R	None	Jac	S-56
Buick....."Standard"	114½	31x4.7	Yes	Own	Sta	6-3 x4½	21.60	L	C	4	PS	Mar	Del	Del	D-Own	Own	M-Own	¾ Own	4.90	E-F	I-R	Mec	Jac	V-48
Buick....."Master"	128	32x5.7	Yes	Own	6	6-3½x4½	27.34	L	C	4	PC	Mar	Del	Del	D-Own	Own	M-Own	F-Own	4.73	E-F	I-R	Mec	Jac	V-47½
Cadillac.....V-63	132	33x5	Yes*	Own	63	8-3½x5½	31.25	L	C	3	PC	Own	Del	Del	D-Own	Own	M-Spi	F-Own	4.50	B-F	I-R	Mec	Own	N-54
Case.....X	122	32x4½	Yes*	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	½ Col	4.90	E-R	I-R	Hyd*	Jac	S-55
Case.....JIC	122	32x4½	Yes*	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	½ Col	4.90	E-R	I-R	Hyd*	Jac	S-54½
Case.....Y	132	33x5	Yes*	Cont	6T	6-3½x5	33.75	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	¾ Col	4.45	E-R	I-R	Hyd*	Own	S-57
Chandler.....SS	123	33x6.0	Yes*	Own	6	6-3½x5	29.40	L	C	4	PC	Sch	Bos	Bos	P-B&B	Own	M-The	F-Own	4.45	E-R	E-T	Mec*	Own	S-58½
Chevrolet.....Superior	103	30x3½	No	Own	Sup	4-3½x4	21.76	L	C	3	PS	Zen	Rem	Rem	K-Own	Own	M-Own	½ Own	3.77	E-R	I-R	None	Own	Q-28
Chrysler.....Six	112½	30x5.7	Yes	Own	Six	6-3 x4½	21.60	L	A	7	FP	Bal	Rem	Rem	D-Own	Own	M-Own	½ Own	4.60	E-F	E-T	Hyd	Jac	S-53
Cleveland.....43	115½	31x5.2	Yes	Own	43	6-3½x4½	23.44	L	C	3	PC	Sch	Bos	Bos	P-B&B	Own	R-Sne	½ Own	4.90	E-R	E-T	Mec*	CAS	S-53
Cole.....Master	127	31x7.3	Yes	Nort	311	8-3½x4½	39.20	L	A	3	PC	Sch	Bos	Del	D-Nor	Nor	M-Spi	F-Col	4.10	E-R	I-R	None	Own	S-57
Crawford.....6-70	138	33x4½	No	Cont	6T	6-3½x5½	31.54	L	C	4	PC	Zen	Wes	Bos	D-B-L	B-L	M-Spi	½ Tim	5.00	E-R	I-R	None	Lav	S-58
Cunningham.....V4	142	33x5	No	Own	V4	8-3½x5	45.00	L	C	3	FP	Str	Del	Del	D-Own	Own	R-Sne	F-Tim	4.23	E-R	I-R	None	Gem	J-62
Dagmar.....6-70	138	33x5	No	Cont	6T	6-3½x5½	31.54	L	C	4	PC	Zen	Wes	Bos	D-B-L	B-L	M-Spi	½ Tim	5.00	E-R	I-R	None	Lav	S-
Daniels.....24-38	138	33x5	Yes*	Own	24-38	8-3½x5½	39.20	L	C	3	PC	Zen	Del	Del	P-Own	Own	M-Spi	F Tim	4.23	E-R	I-R	None	Ros	S-57
Davis.....90	115	31x4	Yes*	Cont	7U	6-3½x4½	23.44	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	½ Tim	5.10	E-F	I-R	Hyd	Ros	S-52
Davis.....91	118	32x4½	Yes*	Cont	8R	6-3½x4½	27.34	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	½ Tim	5.10	E-F	I-R	Hyd	Ros	S-52
Dodge Brothers.....	116	32x4	No	Own	D	4-3½ x ½	24.03	L	A	3	PS	Ste	N.E.	N.E.	D-Own	Own	M-Own	½ Own	4.54	E-R	I-R	None	Own	S-55
Dorris.....	132	32x5	Yes*	Own	6-80	6-4 x5	38.40	L	A	7	PC	Str	Bos	Bos	D-Own	B-L	M-Spi	½ Tim	3.77	E-R	I-R	None	Ros	S-60
Duesenberg Straight.....8	124	33x5	Yes*	Own	8	8-2½x5	26.45	L	A	3	PC	Str	Del	Del	P-Own	Own	R-Chi	½ Own	4.90	I-F	E-T	Hyd	Ros	S-59
Dupont.....C	124	32x4½	No	H-Sp	90	6-3½x5	29.40	L	C	3	PS	Str	Wes	Wes	D-B-L	B-L	M-Spi	F Col	4.45	E-R	I-R	None	Jac	S-58
Durant.....A-22	109	31x4	Yes*	Cont	Spec	4-3½x4½	24.03	L	A	3	PC	Til	A-L	A-L	P-Own	War	M-Spi	¾ Ad	4.33	E-R	I-R	Mec*	War	S-50½
Elcar.....4-41	112	31x4	Yes*	Lyc	CF	4-3½x5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	½ Sal	4.70	E-R	E-T	Mec*	Ros	S-51
Elcar.....6-51	113	31x4	Yes*	Cont	7U	6-3½x4½	23.44	L	C	4	PC	Str	A-L	A-L	P-B&B	W-G	M-Mec	¾ Sal	4.70	E-R	E-T	Mec*	Ros	E-51
Elcar.....6-61	118	32x4	Yes*	Cont	8R	6-3½x4½	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Har	¾ Sal	4.70	E-R	I-R	Mec*	Ros	S-52
Elcar.....8-80	127	32x6.2	Yes	Lyc	H	8-3½x4½	31.25	L	C	5	PS	Str	Del	Del	P-B&B	W-G	M-Spi	¾ Sal	4.71	E-F	E-T	Hyd	Ros	S-58
Essex.....6	110½	31x5.2	Yes	Own	6	6-2½x4½	17.32	L	A	3	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	½ Own	5.60	E-R	I-R	None	Own	S-51½
Flint.....40	115	30x5.2	Yes	Cont	40	6-3½x4½	23.44	L	C	4	PC	Til	A-L	A-L	P-Own	War	M-Spi	½ Ad	4.77	E-F	E-F	Mec	War	S-50
Flint.....55	120	30x3½	Yes*	Own	55	6-3½x5	27.34	L	C	7	PC	Str	DeJ	DeJ	P-Own	War	M-Spi	½ Ad	4.77	E-R	I-R	Hyd*	Own	S-54
Ford.....T	100	30x3½	No	Own	T	4-3½x4	22.50	L	C	3	Sp	Own	Own	Own	D-Own	Own	M-Own	½ Own	3.63	E-T	I-R	None	Own	O-43½
Franklin.....10 C	115	32x4.9	Yes	Own	10-C	6-3½x4	25.35	L	A	7	PC	Str	A-K	A-K	P-M&E	Own	M-Spi	½ Own	4.73	E-T	E-R	None	Own	E-38
Gardner.....Series 5	112	32x4	Yes*	Lyc	CE	4-3½x5	21.76	L	A	5	PC	Zen	Wes	Wes	P-B&B	Mec	M-Pet	¾ Fli	4.80	I-R	I-R	None	Ros	S-51
Gray.....O	104	30x3½	Yes*	Own	R	4-3½x4	21.03	L	A	3	Sp	Sec	Wes	Wes	P-Own	Det	R-Sne	½ Tim	3.90	I-R	I-R	None	Own	Q-30
H.C.S.....Series 6	126	32x5	Yes*	Own	6	6-3½x5	29.40	L	C	3	FP	Str	Del	Del	D-B-L	B-L	M-Spi	¾ Own	4.63	I-R	I-R	None	Gem	S-56
Hatfield.....6-55	121	32x4	No	H-Sp	40	6-3½x5	25.35	L	C	3	PS	Str	Bos	Bos	P-B&B	Dur	M-Spi	½ Col	4.63	E-R	I-R	None	Gem	S-58
Haynes.....CO	121	33x5.7	Yes	Own	60	6-3½x4½	29.40	L	C	3	PS	Ray	Kin	L-N	D-Own	Mec	M-Thi	½ Own	4.41	E-R	E-T	None	Jac	S-51½
Hudson.....Super 6	127	33x6.2	Yes	Own	6	6-3½x5	29.40	L	A	4	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	½ Own	4.45	E-R	I-R	None	Gem	S-58
Hupmobile.....Series R	115	32x4	Yes*	Own	R	4-3½x5½	16.90	L	C	3	PC	Str	Wes	Wes	D-Lon	Own	M-Own	¾ Own	4.87	E-R	I-R	None	Ros	S-56½
Jewett.....SR	112	32x4.9	Yes	Own	6	6-3½x5	25.36	L	C	3	PC	Ray	A-K	Rem	D-Lon	W-G	M-Mec	½ Tim	4.45	E-R	E-T	None	Gem	S-54
Jordan.....K&L	120	32x4	Yes*	Cont	Spec	6-3½x4½	26.34	L	C	4	PC	Str	Del	Del	P-Det	Det	M-Thi	½ Tim	4.45	E-F	I-R	Hyd	Gem	S-55½
Jordan....."A"	125½	32x6.2	Yes	Cont	Spec	8-3 x4½	28.60	L	C	5	PC	Str	Bos	Bos	P-Det	Det	M-Thi	½ Tim	4.45	I-F	E-T	Hyd	Gem	S-55½
King.....L&K	120	32x4½	No	Own	L	8-3 x5	28.80	L	C	3	PS	Bal	A-K	Wes	D-Det	Own	R-Uni	F Col	4.88	E-R	I-R	None	Jac	S-40
Kissel.....55	121	32x4½	Yes*	Own	55	6-3½x5½	26.34	L	A	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Spi	¾ Tim	4.42	E-R	E-T	Hyd*	Jac	S-56
Lexington.....Concord	119	32x5½	Yes*	Anst	M	6-3½x4½	26.30	L	C	3	FP	Ray	Con	Bos	P-Lon	W-G	R-Pie	½ Sal	4.70	E-R	E-T	None	Ros	S-56
Lexington.....Minute Man	123	32x6.2	Yes	Anst	F	6-3½x5½	26.30	L	C	3	FP	Ray	Con											



Remember the Brass Horn With the Rubber Bulb?

Chattering along at the desperate speed of a full 20 miles an hour, you "honked" for the right of way.

You slapped the rubber bulb of the old brass horn—one slap or punch per honk.

Now you press your finger lightly on a button—and the electric horn under the hood shrills out a warning that carries a mile.

No manufacturer would think of equipping a car with the old rubber-bulb horn today—and the day is not far distant when no manufacturer can afford not to equip with Lockheed Hydraulic Four-Wheel Brakes.

The whole story can be summed up in a sentence: There has never been

a sound major improvement in motor car design which has not eventually enjoyed universal demand and use—and Lockheed Hydraulic Brakes are a fundamental improvement of major importance.

You can't escape progress—except by dying.

You can't ignore a great fundamental improvement like Lockheed Hydraulic Brakes without eventually being ignored—by public and by dealers.

Why should any manufacturer continue to penalize himself and his dealers in the face of the brilliant success of Lockheed Hydraulic Four-Wheel Brakes?

There is only one answer to that question: He shouldn't.

HYDRAULIC BRAKE COMPANY
5835 Russell Street Detroit, Michigan

LOCKHEED

Hydraulic Four Wheel Brakes

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

[MAKE AND MODEL	TIRES			ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES			Steering Gear	Rear Springs
	Wheelbase (Ins.)	Standard Size (Ins.)	Balloon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make	Make	Type and Make	Type and Make	Gear Ratio	Foot, Type and Location	Hand, Type and Location	Four-Wheel Brake, Type	Make	Type and Length	
Paige.....	131	33x4 1/2	Yes*	Cont	Spec	6-3 3/4x5	33.75	L	C	4	PC	Ray	A-K	Rem	D-Lon	W-G	M-Mec	1 1/2 Tim	4.90	E-R	I-R	None	Gem	S 61 1/2	
Peerless.....70	126	33x6.2	Yes	Owa	70	6-3 1/2x5	23.40	L	...	7	PC	Joh	Del	Del	D-Own	Own	M-Spi	1 1/2 Tim	4.63	E-F	I-R	Hyd	Gem	S 57 1/2	
Peerless, Equipoised "8"	123	33x6.6	Yes	Own	66	8-3 1/4x5 1/2	33.80	L	C	3	PC	Str	Del	Del	D-Own	Own	M-Spi	1 1/2 Tim	4.99	E-R	I-R	Hyd	Gem	S 60	
Pierce-Arrow.....33	138	33x5	No	Owa	33	6-4 x5 1/2	38.10	T	C	7	FP	Own	Del	Del	D-Own	Own	M-Mec	1 1/2 Tim	4.29	E-R	I-R	Mec*	Gem	S 60	
Pierce-Arrow....."80"	130	32x5.7	Yes	Own	"80"	6-3 1/2x5	23.40	L	C	7	PC	Own	Del	Del	P-B&B	B-L	M-Spi	1 1/2 Tim	4.45	I-F	I-R	Mec	Gem	S 56 1/2	
Reo.....T6	120	32x6	Yes	Own	T6	6-3 1/2x5	21.31	G	A	4	PS	Sch	NE	NE	D-Own	Own	(M-Own)	1 1/2 Own	4.70	E-R	I-R	None	Own	S 54 1/2	
Revere.....M	131	32x4 1/2	Yes*	Mons	4	1-4 3/4x6	33.63	H	A	2	PS	Str	Bos	Wes	D-B-L	B-L	(R-Own)	3/4 Stn	3.41	E-R	I-R	None	Gem	S 58	
Rickenbacker.....C	117	32x4	Yes*	Own	C	6-3 1/4x4 1/2	23.41	L	C	3	PC	Str	Bos	Bos	D-Own	W-G	M-Mec	1 1/2 Own	4.63	I-F	E-T	Mec	Gem	S 57	
Rickenbacker.....A	121 1/2	33x4 1/2	Yes*	Own	A	8-3 x4 1/2	28.60	L	C	9	PC	Zen	Bos	Bos	D-Own	W-G	M-Mec	1 1/2 Own	5.10	I-F	E-T	Mec	Gem	S 59	
Roamer.....6-54-E	118	32x4 1/2	No	Cont	12XD	3-3 1/2x5 1/4	29.40	L	A	3	PS	Str	Spl	Wes	P-B&B	Ful	R-M&E	3/4 Tim	4.60	E-R	I-R	Mec*	Jac	S 53 1/2	
Roamer.....4-75-E	123	32x4 1/2	No	Dues	G1	1-4 1/4x5	28.90	H	A	3	7P	Str	Bos	Wes	D-B-L	B-L	R-M&E	3/4 Tim	4.63	E-R	I-R	Mec*	Jac	S 55 1/2	
Rollin.....G	112	31x5.2	Yes*	Own	G	1-3 1/2x4 1/2	16.90	L	A	4	7P	Til	Con	Dyn	P-B&B	Mun	R-Sae	1 1/2 Sal	5.19	E-F	E-F	Mec	Ros	O-46	
Rolls-Royce.....40-50	143 1/2	33x5	No	Own	40	1-4 1/2x4 1/2	48.60	L	A	7	7P	Own	Bos	Wes	K-Own	Owa	M-Own	F Own	3.72	I-R	I-R	None	Own	S 54 1/2	
Stanley.....750	130	33x5.7	Yes	Own	750	2-4 x5	13.00	X	C	2	Non	Non	Non	Bij	Non	Non	Non	1 1/2 Own	4.50	E-R	I-R	None	Own	S 54 1/2	
Star.....4	102	30x4.9	Yes	Cont	Spec	1-3 1/4x4 1/4	15.63	L	C	3	PS	Til	A-L	A-L	P-Own	Non	M-Spi	3/4 Ad	4.87	E-R	I-R	Mec*	War	S 49 1/2	
Stearns Knight.....C	121	32x4 1/2	Yes*	Own	K i	6-3 1/4x5	25.35	X	C	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Cl	1 1/2 Own	5.30	E-R	I-R	Hyd*	Eat	S 50	
Stearns-Knight.....B	119	33x4 1/2	Yes*	Own	Kri	1-3 3/4x5 1/2	22.50	X	C	3	PC	Sh	A-K	A-L	D-Own	Owa	R-Cl	1 1/2 Own	4.50	E-R	I-R	Hyd*	Own	S 50	
Stearns-Knight.....S	130	33x6.0	Yes	Own	Kni	6-3 1/2x5	29.40	X	C	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Cl	1 1/2 Own	4.90	E-R	I-R	Hyd	Sta	S 50	
Sterling-Knight.....	125	32x4 1/2	Yes*	Own	Kni	6-3 1/4x5 1/2	25.35	X	C	7	7P	Str	Wes	Wes	D-Ful	Ful	R-Cl	1 1/2 Tim	4.66	E-R	I-R	Mec*	Ros	S 58	
Stevens-Duryea.....G	112	31x5.2	No	Own	G	6-4 1/2x5 1/2	47.25	L	C	4	PS	Str	Bos	Bos	D-B-L	B-L	M-Spi	F Tim	3.76	E-R	I-R	None	Ros	S 57 1/2	
Studebaker.....Sta. Six	113	31x5.2	Yes	Own	ER	6-3 3/4x4 1/2	27.31	L	C	4	PC	Str	(Wag	(Wag	P-Own	Own	R-The	1 1/2 Own	4.60	E-R	I-R	Hyd*	Own	S 50	
Studebaker.....Spec. Six	120	32x6.2	Yes	Own	EQ	6-3 1/2x5	29.40	L	C	4	PC	Str	(Wag	(Wag	P-Own	Own	M-Spi	1 1/2 Own	3.69	E-R	I-R	Hyd*	Own	S 56	
Studebaker.....Big Six	127	31x7.3	Yes	Own	EP	6-3 3/4x5	33.0	L	C	4	PC	Bal	(Wag	(Wag	P-Own	Own	M-Spi	1 1/2 Own	3.69	E-R	I-R	Hyd*	Own	S 53	
Stutz.....693-4	120	32x4 1/2	Yes*	Own	691	6-3 1/2x5	29.40	I	C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	1 1/2 Tim	5.10	E-R	I-R	None	Gem	S 61 1/2	
Stutz.....KLDH	130	32x4 1/2	No	Own	KLDH	1-4 3/4x6	30.63	T	C	3	PC	Str	Del	Rem	D-W-G	Own	M-Har	1 1/2 Own	3.75	I-R	I-R	None	Gem	S 60	
Stutz.....695	130	32x4 1/2	Yes*	Own	691	1-3 1/2x5	29.40	I	C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	1 1/2 Tim	4.90	E-R	I-R	Hyd*	Gem	S 61 1/2	
Templar.....	122	33x4	No	Own	...	1-3 3/4x5	27.31	L	C	...	PS	Til	Dyn	Dyn	P-M&E	W-G	R-Sae	3/4 Sal	5.10	I-F	E-T	Mec	Ros	S 54	
Velie.....60	118	31x5.2	Yes	Own	50	1-3 3/4x4 1/4	24.38	L	C	4	FP	Str	Wes	Wes	P-B&B	Mun	M-Thi	1 1/2 Own	5.10	E-F	E-T	Hyd	Ros	S 55	
Westcott.....48	125	32x4 1/2	Yes*	Cont	12X	6-3 1/2x5 1/4	29.40	L	A	3	PS	Ray	Del	Del	P-B&B	B-L	M-Pet	1 1/2 Tim	4.45	E-R	I-R	Mec*	Gem	S 59	
Westcott.....44	120	32x4 1/2	Yes*	Cont	8R	6-3 3/4x4 1/2	27.31	L	C	3	PC	Str	Del	Del	P-B&B	W-G	M-Pet	1 1/2 Col	4.90	E-R	I-R	Mec*	Gem	S 57 1/2	
Westcott.....60	118	32x4	Yes*	Cont	8R	6-3 3/4x4 1/2	27.31	L	C	4	PC	Str	Del	Del	P-M&E	W-G	M-Pet	1 1/2 Col	4.63	E-R	E-T	Mec*	Gem	S 56	
Wills Ste. Claire.....A&B69	121	32x4 1/2	Yes*	Own	(A68	8-3 1/4x4	33.80	I	C	3	FP	(Zen	Del	Del	P-Own	Own	M-Spi	1 1/2 Eat	4.45	(E-R	(I-R	(None	Own	S 54 1/2	
Willys Knight.....64&6	127	32x6.2	Yes	Own	(B68	8-3 1/4x4	33.80	I	C	3	FP	(Zen	Del	Del	P-Own	Own	M-Spi	1 1/2 Eat	4.45	(E-R	(I-R	(None	Own	S 54 1/2	
Willys Knight.....	118	33x4.9	Yes	Own	64	1-3 3/4x4 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	R-Own	3/4 Own	(4.44	(E-R	(I-R	(None	Own	S 55	
Willys Knight.....	124	33x5.7	Yes	Own	64	1-3 3/4x4 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	R-Own	3/4 Own	(4.44	(E-R	(I-R	(None	Own	S 55	
TAXICABS																									
Ambassador.....D-1	114	31x4	Yes	Cont	7U	6-3 1/2x4 1/4	23.44	L	C	3	Sp	Zen	Del	Del	D-Lon	Opt	Spi	1/4 Tim	4.90	E-R	E-T	None	Ros	56	
Checker.....	117	33x4 1/2	No	Buda	WTU	4-3 3/4x5 1/8	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S 57 1/2	
Driggs.....	108 1/2	30x3 1/2	No	Own	.....	1-2 5/8x4 1/2	11.03	L	C	...	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	3/4 Own	4.74	E-R	I-R	None	Own	S-
Elcar.....4	112	31x4	Yes*	Lyc	CF	4-3 3/8x5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	1 1/2 Sal	4.75	E-R	E-T	Mec*	Ros	S 51	
Elcar.....6	118	32x4	Yes*	Cont	3R	1-3 3/4x4 1/2	27.31	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Spi	3/4 Sal	4.75	E-R	I-R	Mec*	Ros	S 52	
H.C.S.....	110	29x4 1/2	No	Wauk	CH	1-3 3/8x5 1/2	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	1 1/2 Own	5.10	E-R	E-T	None	Ros	S-	
Kelsey.....E	112	32x4	No	Lyc	CH	1-3 3/8x5 1/2	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	3/4 Sal	5.10	E-R	E-T	None	Lav	S 55	
Pennant.....	115	33x4 1/2	No	Buda	WTU	1-3 3/4x5 1/8	22.50	L	B	3	PC	Zen	Bos	Wes	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S 57	
Pennant.....Premier	118	33x4 1/2	No	Buda	WTU	1-3 3/4x5 1/8	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	3/4 Col	4.70	E-R	I-R	None	Jon	S 57 1/2	
Rauch & Lang.....T	112	32x4	No	Buda	WTU	4-3 3/4x5 1/8	22.50	L	C	3	Sp	Zen	Bos	Dyn†	D-Dtl	Det	Spi	1/2 Sta	5.10	E-R	E-T	None	Gem	S 59 1/2	
Rauch & Lang**	102	33x4 1/2	Yes	Own	.....	Electric	.....	.....	.....	.....	.....	.....	.....	.....	None	None	Own	Own	8.60	.....	.....	None	.....	S-
Reo.....	113	33x5.7	Yes*	Own	T-6	6-3 3/8x5	21.30	G	A	4	PS	Sch	N-E	N-E	D-Own	Own	Own	1 1/2 Own	4.70	E-R	I-R	None	Own	S 54	
Traveler.....	108 1/2	32x4	No	Buda	WTU	4-3 3/4x5 1/8	22.50	L	B	3	PC	Zen	Eis	Eis	D-Dtl	W-M	Spi	Col	E-R	I-R	None	Gem	S-
White.....15A	119	34x4 1/2	No	Own	GK	1-3 3/4x5 1/8	22.50	L	C	...	Sp	Zen	Opt	Opt	P-Own	Own	Own	1 1/2 Own	5.36	E-R	I-R	None	Own	S-	
Willys Knight.....A.B.C.	119	34x4 1/2	Yes*	Own	64	4-3 3/4x5 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	Own	3/4 Own	5.12	E-R	I-R	None	Own	S 55	
Yellow.....A-4	109	32x4 1/2	No	Cont	V7	4-3 3/4x5	22.50	L	C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S 56	
Yellow.....A-2	109	29x4 1/2	Yes	Cont	V7	4-3 3/4x5	22.50	L	C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S 56	

TAXICABS

Ambassador.....D-1	114	31x4	Yes	Cont	7U	6-3 1/2x4 1/4	23.44	L	C	3	Sp	Zen	Del	Del	D-Lon	Opt	Spi	1 1/2 Tim	4.90	E-R	E-T	None	Ros	56
Checker.....	117	33x4 1/2	No	Buda	WTU	4-3 3/4x5 1/2	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S 57 1/2
Driggs.....	108 1/2	30x3 1/2	No	Own	...	1-2 5/8x4 1/2	11.03	L	C	...	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	3/4 Own	4.74	E-R	I-R	None	Own	S
Elcar.....4	112	31x4	Yes*	Lyc	CF	1-3 3/4x5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	1 1/2 Sal	4.75	E-R	E-T	Mec*	Ros	S 51
Elcar.....6	118	32x4	Yes*	Cont	3it	1-3 3/4x4 1/2	27.31	L	A	4	PC	Str	Del	Del	P-B&B	W-G	M-Mec	3/4 Sal	4.75	E-R	E-T	Mec*	Ros	S 52
H.C.S.....	110	29x4 1/2	No	Wauk	...	...	...	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	1 1/2 Own	...	I-R	E-T	...	Ros	S
Kelsey.....E	112	32x4	No	Lyc	CH	1-3 3/4x5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	3/4 Sal	5.10	E-R	I-R	None	Lav	S 55
Pennant.....	115	33x4 1/2	No	Buda	WTU	1-3 3/4x5 1/2	22.50	L	B	3	PC	Zen	Bos	Wes	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S 57
Premier.....4A	118	33x4 1/2	No	Buda	WTU	1-3 3/4x5 1/2	22.50	L	B	3	PC	Zen	Bos	Wes	D-Ful	Ful	Blo	3/4 Col	4.70	E-R	I-R	None	Jon	S 57 1/2
Rauch & Lang.....T	112	32x4	No	Buda	WTU	4-3 3/4x5 1/2	22.50	L	C	3	Sp	Zen	Bos	Dyn	D-Dtl	Det	Spi	1 1/2 Sta	5.10	E-R	E-T	None	Gem	S 50 1/2
Rauch & Lang.....	102	33x4 1/2	No	Own	...	Electric	...	L	C	...	...	...	...	...	None	None	Own	Own	8.60	...	...	...	...	...
Reo.....	113	32x4 1/2	Yes*	Own	T-6	6-3 1/2x5	21.30	G	A	4	PS	Sh	N-E	N-E	D-Own	None	Own	1 1/2 Own	4.70	E-R	I-R	None	Own	S 54
Traveler.....	108 1/2	32x4	No	Buda	WTU	4-3 3/4x5 1/2	22.50	L	B	3	PC	Zen	Eis	Eis	D-Dtl	W-M	Spi	Col	...	E-R	I-R	None	Gem	S
White.....15A	119	34x4 1/2	No	Own	GK	4-3 3/4x5 1/2	22.50	L	C	...	Sp	Zen	Opt	Opt	P-Own	Own	Own	1 1/2 Own	5.36	E-R	I-R	None	Own	S
Willys Knight.....A.B.C.	118	32x4 1/2	Yes*	Own	61	4-3 3/4x4 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	Own	3/4 Own	5.12	E-R	I-R	None	Own	S 55
Yellow.....O-4	109	32x4 1/2	No	Cont	V7	4-3 3/4x5	22.50	L	C	3	Sp	Zen	Bos	N-Et	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S 56
Yellow.....A-2	109	29x4 1/2	Yes	Cont	V7	4-3 3/4x5	22.50	L	C	3	Sp	Zen	Bos	N-Et	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S 56

ABBREVIATIONS—

*—Electric
 †Generator only
 *—At extra cost
 ‡—On Phaeton models
 A—Aluminum
 Aust—Ansted
 Ad—Adams
 A-K—Atwater-Kent
 A-L—Auto-Lite
 B—Semi Steel
 Bal—Ball & Ball
 B & B—Borg & Beck
 B-F—Both Internal and External Four Wheels
 Bij—Bijur
 B-L—Brown-Lipe
 Blo—Blood
 Bos—Bosch
 C—Cast Iron
 Car—Carter
 Cl—Climax
 Col—Columbia
 Con—Connecticut
 Cont—Continental

D—Multiple Disc
 Del—Delco
 Det—Detroit
 De J—De Jon
 Dit—Ditwiler
 Doo—Dooley
 Dtl—Detlaff
 Dues—Duesenberg
 Dur—Durstons
 Dyn—Dyneto
 E—Full Elliptic
 E-F—External Four Wheels
 E-R—External Rear Wheels
 E-T—External Transmission
 Ent—Eaton
 F—Full Floating
 Fall—Falls
 Flt—Flint
 FP—Full Pressure to all bearings including wrist pins
 Ful—Fuller
 1/2 F—Semi-Floating
 3/4 F—Three-Quarter Floating
 G—Head and Side
 G-D—Gray & Davis
 Gem—Gemmer

G-L—Grant-Lees
 Goo—Goodrich
 H—Horizontal
 Har—Hart
 Hol—Holley
 Hoo—Hoosier
 H-Sp—Herschell-Spillman
 Hyd—Hydraulic
 I—In Head
 I-F—Internal Four Wheels
 I-R—Internal Rear Wheels
 J—Three-Quarter Elliptic
 Jac—Jacox
 Jax—Jaxon
 Joh—Johnson
 Jon—Jones
 K—Cone
 Kin—Kingston
 L—L Head
 Lav—Lavine
 Lon—Long
 L-N—Leece-Neville
 Lyco—Lycoming
 Mar—Marvel
 M—Metal
 M & E—Merchant & Evans

Mec—Mechanics
 Monx—Monson
 Mun—Muncie
 N—Platform
 Non—None
 N. E.—North East
 Nor—Northway
 O—Special Type
 Opt—Optional
 P—Single Plate
 PC—Pressure to all Crankshaft and connecting rod bearings
 Pen—Penfield
 Pet—Peters
 Pic—Pick
 PS—Splash and Pressure
 Q—Quarter Elliptic
 R—Fabric
 Ray—Rayfield
 Rem—Remy
 Roc—Rockford
 Ros—Ross
 S—Semi Elliptic
 Sal—Salisbury
 Sch—Schebler
 Sci—Scintilla

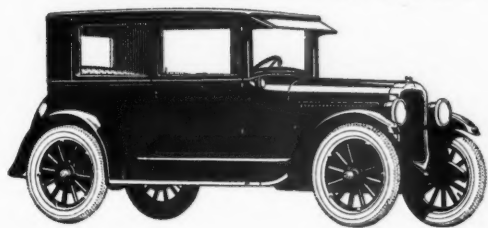
Sco—Scoe
 Snc—Snead
 Sp—Circulating Splash
 Spe—Special
 Spl—Spicer
 Spl—Splittorf
 Sta—Standard
 S. E.—Standard Equipment
 Ste—Standard
 Ste—Stewart
 Str—Stromberg
 T—T Head
 The—Thermoid
 Thi—Thierner
 Til—Tillotson
 Tim—Timken
 Uni—Universal
 V—Cantilever
 W-G—Warner Gear
 W-M—Willys-Morrow
 Wag—Wagner
 War—Warner
 Weld—Weldley
 Wes—Westinghouse
 Wis—Wisconsin
 X—Sleeve
 Zen—Zenith

The big fellow stands for the number of Oldsmobile dealers today—the little fellow, for the dealer organization of just twelve months ago.

(From 637 dealers to 2148!)



The little car stands for the Oldsmobiles built in the year ending Oct. 1, 1923. The big car represents the number built in the last 12 months!



Olds
Motor Works,
Lansing, Mich.

I would like to
hear more about the
possibilities of the Olds-
mobile franchise.

Name _____

Address _____

GATES BELTS

"The Standardized Fan Belt"



FIG. 1.

Ordinary fan belt. Threads run lengthwise and across. To break this belt on the marked line only the lengthwise threads need be broken.

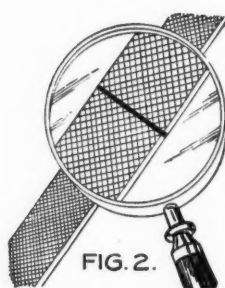


FIG. 2.

Gates Vulco Belt. Threads run diagonally. To break this belt every thread both lengthwise and across must be broken. This bias weave construction is patented.

There's a very simple reason for the extra service the Gates Vulco Belt is giving your customers. It's the bias weave construction (patented)—and the little diagrams above will tell you why.

Made by the World's Largest
Manufacturers of Fan Belts.

ROLLIN

Everything has to be sold—more or less—but keen sighted dealers will observe in the Rollin a car that requires only a minimum of sales effort.

Does your clientele demand a swagger distinctiveness? The Rollin pre-eminently satisfies this desire—each model is eye-compelling!

Do you meet many buyers with an understanding of and a demand for mechanical superiority? The more particular they are—the more completely the Rollin will satisfy them.

There are still a few territories where a competent dealer can obtain a franchise that will secure cordial, helpful and highly profitable relations with the famous Rollin organization.

A wire — or letter — will bring full details.

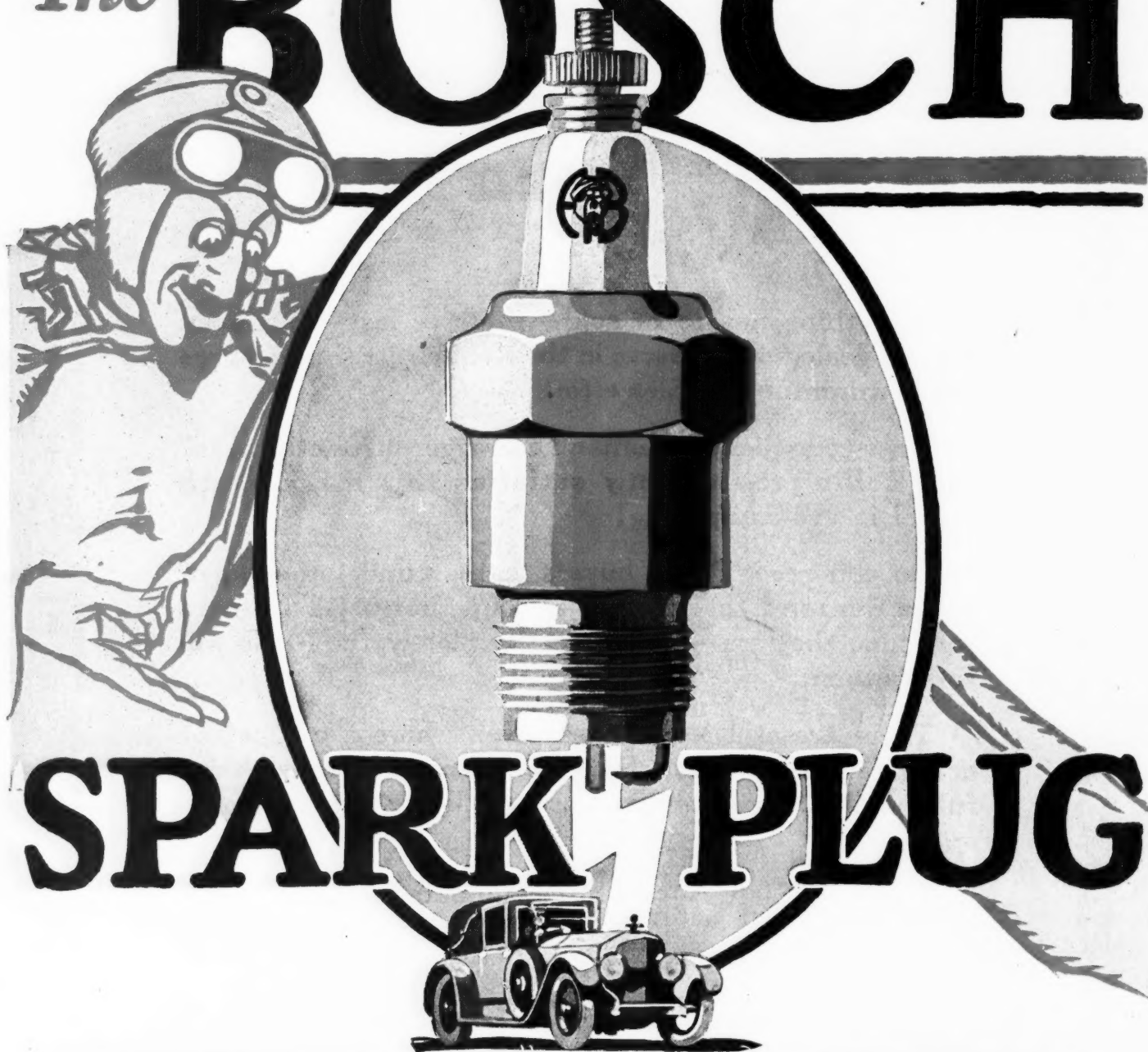
Touring Car	-	-	-	-	-	\$ 995
Three Seated Coupe Roadster	-	-	-	-	-	1195
Five Passenger Sedan	-	-	-	-	-	1295
Special Coupe	-	-	-	-	-	1395
Special Sedan	-	-	-	-	-	1550

Prices f. o. b. Cleveland. Tax extra.

THE ROLLIN MOTORS COMPANY
CLEVELAND, OHIO



The BOSCH



**BOSCH
IGNITION
SYSTEM
FOR
FORDS
TYPE
600**

Insures quick, easy starts, clean plugs, added power. Has automatic spark advance—is water-proof. Prevents all ignition troubles. Price, \$12.75.



**BOSCH
ELECTRIC
WINDSHIELD
WIPER**

An absolutely reliable automatic cleaner that is operated electrically. Not affected by engine speeds. Puts no burden on the battery. Price \$9.50.



**BOSCH
SHOCK
ABSORBER**

"Smooths the Road"

A new, scientific device that controls car springs perfectly and provides true riding comfort at low cost. Prices per pair: For Fords \$10.00. Medium Cars \$15.00. Heavy Cars \$20.00.

Long Line

The Plug With Real Sales Features—



The insulator used in the Bosch RED Spark Plug is made of "Ambosite", a granite-hard substance with wonderful insulating properties.

It is not porcelain or china—there's no clay in it. It is a new chemical composition which intense heat will not crack, and high electric voltage cannot puncture.

The electrodes are long wearing, too. They're made of pure nickel—not steel. They don't burn away like ordinary electrodes. Their crescent shape makes bigger sparks and easy starting.

The plug body and threads are zinc plated—Bosch Plugs won't rust in stock or in reserve.

The Bosch RED Plug is the QUALITY Plug you've been looking for—absolutely gas tight, long lived and dependable under all conditions.

It is backed by the Bosch guarantee and by an enviable reputation it has made for itself. Five types service all popular cars—a small stock gives a quick turnover and a good profit.

PRICES

Ford Size	75c
<i>In Canada</i>	\$1.00
Other Sizes	\$1.00
<i>In Canada</i>	\$1.25

AMERICAN BOSCH MAGNETO CORPORATION

Main Office and Works: Springfield, Mass.

BRANCHES:

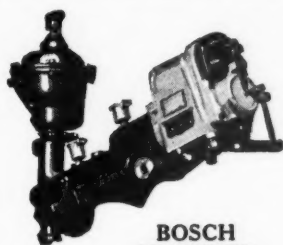
NEW YORK

CHICAGO

DETROIT

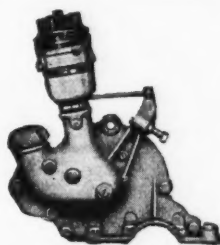
SAN FRANCISCO

DEALERS: Big advantages open to live dealers who can become Bosch Sales Agents and sell the Bosch Long Line of Automotive Necessities



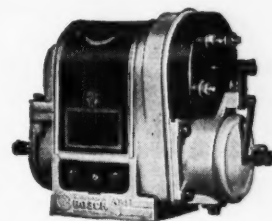
**BOSCH
MAGNETO
FOR
FORDSONS**

Provides Bosch High Tension Magneto Ignition for Fordsons. Eliminates coils and timer. Prevents all ignition troubles. Installed with or without the Bosch Throttle Governor. Prices on request.



**BOSCH DE LUXE
IGNITION SYSTEM
FOR FORDS
TYPE 513**

Includes the Bosch Coil, and Bosch Compensating Governor, which automatically advances and retards the spark to exactly meet the Ford engine's characteristics. Wonderfully efficient. Price, \$25.00.



**BOSCH
HIGH TENSION
MAGNETO**

The world's most dependable ignition system—over four million in use today—in demand everywhere for use on cars, trucks, tractors, motorcycles, motor boats and stationary engines. Prices on request.

**KEEPS THE OIL CLEAN
AND THE FORD HAPPY,**



REXOID

TRANSMISSION LINING

FOR FORD CARS

Like every Thermoid Product -it Wears

SOME transmission linings can't stand oil. It seems to eat them up. That's bad for the oil. Worse for the lining. And worst of all for the car.

The oil gets dirty. The lining gets noisy. And the car gets it coming and going.

But Rexoid keeps the oil clean and the engine happy and healthy.

That Rexoid Compound with which we treat Rexoid Lining is impervious to oil. The oil just can't soak it out. Result—Rexoid doesn't wear smooth and slip. It doesn't wear rough and stick. It preserves its gripping surface and its silent operation to the end.

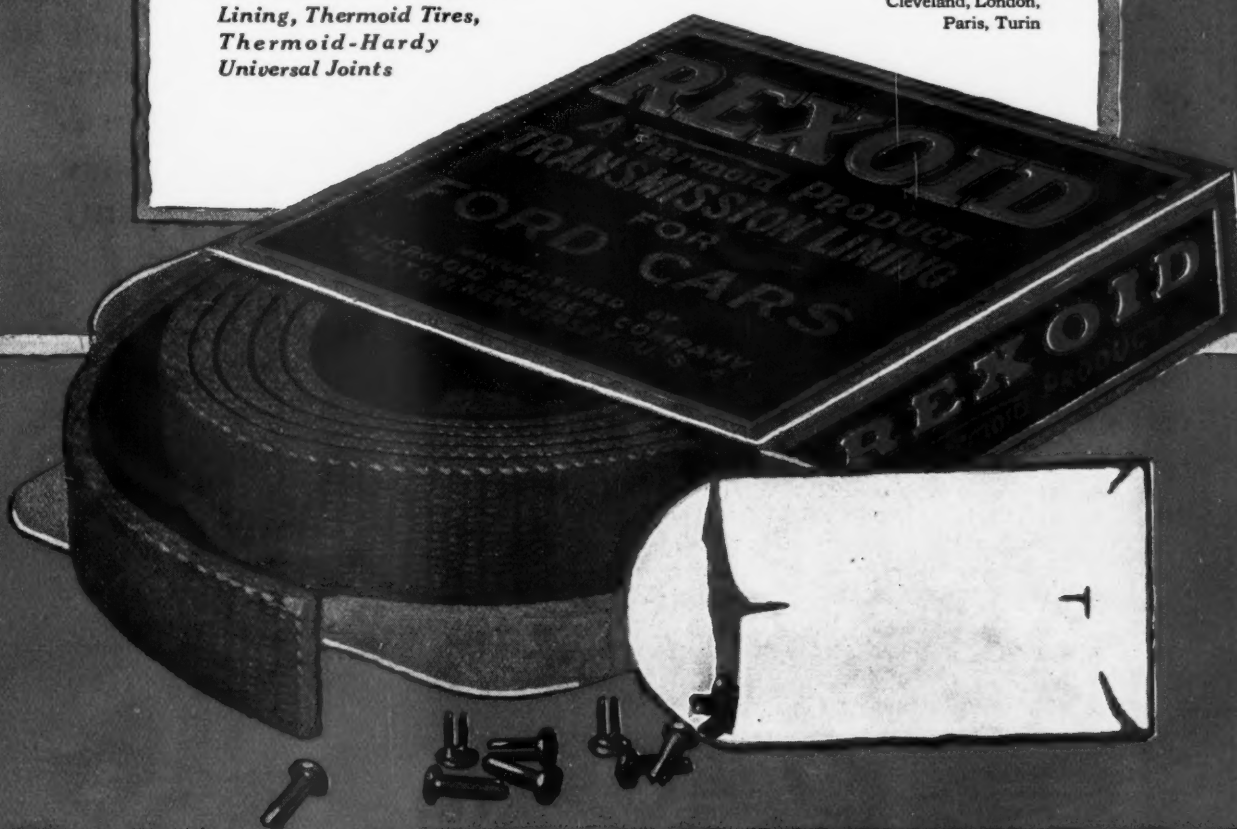
And incidentally—Rexoid outlasts the ordinary lining just about 50 per cent. And why not? It contains just about 50 per cent. more material.

THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City,

*Makers of Thermoid Brake
Lining, Thermoid Tires,
Thermoid-Hardy
Universal Joints*

Boston, San Francisco,
Cleveland, London,
Paris, Turin



These Painted Boards Are Working For You Everywhere—Every Day



What Plan Have You to Take Advantage of Advertising

THE experienced accessory dealer is interested only in nationally known lines of proved quality.

AC Spark Plugs and AC Speedometers are of proved quality—and they are nationally advertised through magazines, painted boards, newspapers and by many other means. This national advertising makes them well known to the public, reduces sales resistance and makes them easy for the

dealer to sell.

Dealers can greatly increase their business by watching AC's advertising, displaying AC merchandise, and by identifying their store more closely with the popularity and prestige of the AC line.

When they do this and follow it up by using the sales thoughts contained in the advertising, they then will get the full benefit of the AC national program.

Sell AC Products—Their Quality and Popularity Assure Demand and Profit

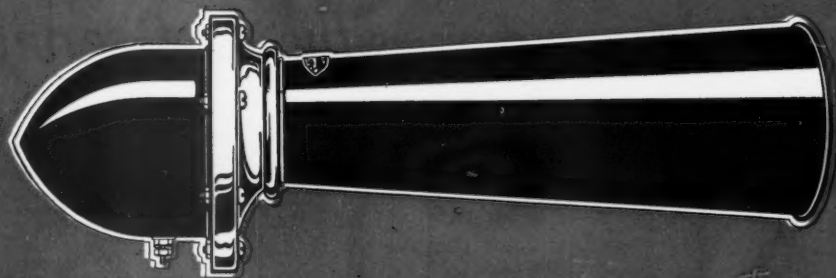
AC Spark Plug Company, FLINT, Michigan

AC-SPHINX
Birmingham
ENGLAND

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139,
Feb. 13, 1917. Other Patents Pending

AC-OLEO
Levallois-Perret
FRANCE



Announcing
The new
SPARTON

S-O-S

A NEW remarkable tone projection of lightning speed--- yet smooth as satin with a ringing harmony of perfectly blended sound. A distinctive high-frequency pitch that cuts through traffic rumble.

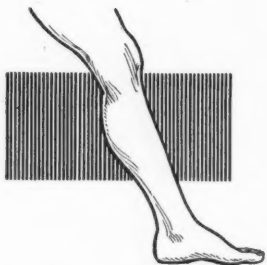
An instrument in which is interwoven the accumulative knowledge and expertness gained through twenty-five years of manufacturing experience. A crowning achievement worthy of SPARTON ideals.

So constructed as to give absolute freedom from drivers care--- requiring no oiling, cleaning or adjusting.

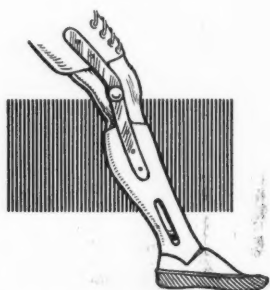
*The Sparks-Withington Co.
Jackson, Mich.*

Use the Real One

It costs less and gives the best service



This is a picture of a real leg.

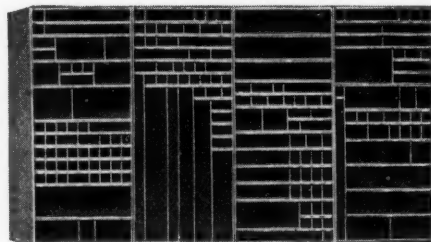


This is a picture of an artificial leg, copied after the original.

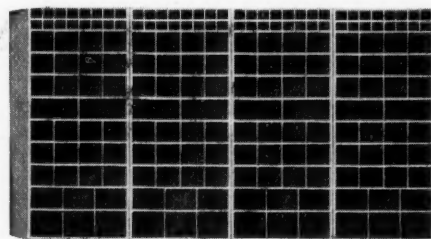


The imitation leg is never as good as the original.

The man with the wooden leg will tell you so.



Now this is a picture of a LAPS System, the original Steel Auto Parts Storage System, designed with the co-operation of car manufacturers.



And this is a set of bins which only pretends to be a system, and requires expensive stock-record keeping.

The set of bins is never as good as the real LAPS System for storing parts. The man who has tried both will tell you so.

LAPS Systems are made only by David Lupton's Sons Company in Philadelphia and are sold by automotive jobbers everywhere.

Write to the Lupton sales office, 2631 Woodward Avenue, Detroit.

◀ **This is a valuable lesson** ▶

Remember Lupton Auto Parts Storage Systems
when steel equipping your parts department

Cash In On This Christmas' Saturday Evening Post Advertising!

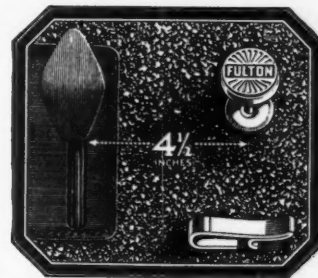
"Aermore Horns and Fulton Accelerators as Christmas Gifts"—are being prominently suggested to millions of Christmas shoppers in *The Saturday Evening Post* and other mediums during November and December. Display them in your windows and on counters. Tie up with these sales-creating advertisements. Let customers examine the Aermore and hear its organ-like tone. It's the signal Gift every motorist wants this Christmas.

Send for the Fulton Special Christmas Sales Plan

This effective sales-getting plan will bring to your store big Christmas business. Special gift boxes—holiday counter and window display ideas are ready to bring into your cash register the real Christmas profits in your territory. Now is the time. Wire or write us, or phone your jobber for complete details.

FULTON ACCELERATOR

The Safety-Driving Gift for Ford Owners, now being featured in *The Saturday Evening Post* and other mediums



Installed 4 1/2 inches or more to right of brake pedal—impossible to accidentally strike accelerator when applying brake. Positive in operation—smooth in action—easily attached to right-hand side of motor. Nickel finish.

More Fulton Accelerators will be on Christmas trees this year than ever before. Supply this demand—display them where they are gift reminders to your customers.

Send for the Fulton Special Christmas Sales Plan, giving name of your jobber. The complete line of Fulton items will give you additional Christmas business.

DEALERS: Write us for Proposition, giving name of your jobber.

THE FULTON CO.
738 - 75th Ave., Milwaukee, Wis.
Automotive Equipment
Pace Setters of Quality



The signal gift

for daddy's or brother's car—for motoring friends. Let Aermore say "Merry Christmas" in its clear, melodious, organ-like tone. For years this musical warning will clear the way with a friendly note. Soft or loud—it never startles or offends—commands instant attention in city or open country. A gift that adds to driving pleasure and completes the car's equipment. Small and compact—dependable, fully guaranteed, easily installed on any car.

Price Complete with Valve and Dash Control
Four Sizes
No. 00—22 inch length, for large cars.....\$14
No. 0—17 inch length, for medium cars.....12
No. 1—15 inch length, for small cars.....10
Ford Special 13 inch length.....7

If your dealer cannot supply you, send us his name. Also make and model of car. We will send Aermore in gift package direct to you or your friends.

FULTON Accelerator

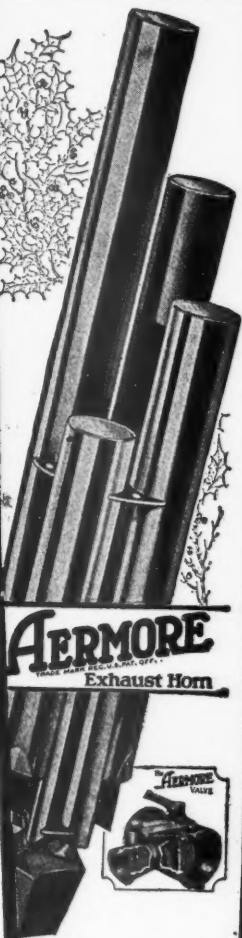
The Safety Driving Gift for Ford Owners

Installed 4 1/2 inches or more to right of brake pedal—the Fulton prevents accidentally striking accelerator when applying brake. Attached to right-hand side of motor—direct action to accelerator—easily installed—nickel finish—\$1.50 at all dealers.

DEALERS: Your jobber can make immediate delivery for Christmas sales—wire him

THE FULTON CO.
Automotive Equipment
Pace Setters of Quality

738 - 75th Ave., Milwaukee, Wis.



Christmas!

our gift list. Your motoring friends lighted with this "Signal with a Aermore never startles or confuses. melodious tone commands instant and tion. It shouts or whispers as you desire. is instantly recognized. Adds distinction Durable, dependable, handsomely nickel-plated. Installed on any car easily.

Price Complete with Valve and Dash Control
Four Sizes
No. 00—22 inch length, for large cars.....\$14
No. 0—17 inch length, for medium cars.....12
No. 1—15 inch length, for small cars.....10
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DEALERS: Your jobber can make immediate delivery for Christmas sales—wire him

THE FULTON CO.
Automotive Equipment
Pace Setters of Quality

738 - 75th Ave., Milwaukee, Wis.

The above are reproductions of advertisements appearing in the *Saturday Evening Post* in Nov. 15th and Dec. 15th issues.





It Only Happens Once

A blinding rain or snow storm—a fast train—a motor car filled with people, directly in its path. A terrific crash and it's all over. With a

STROMBERG

Electrically Driven

WINDSHIELD WIPER

it would not have happened. Do not wait until it is too late—equip your car now! Be positive of a clear vision. A turn of the switch starts the continuous motion of wiping arm. Consumes very little current. Does not interfere with carburetion.

Made by manufacturers of World's Famous Stromberg Carburetors.

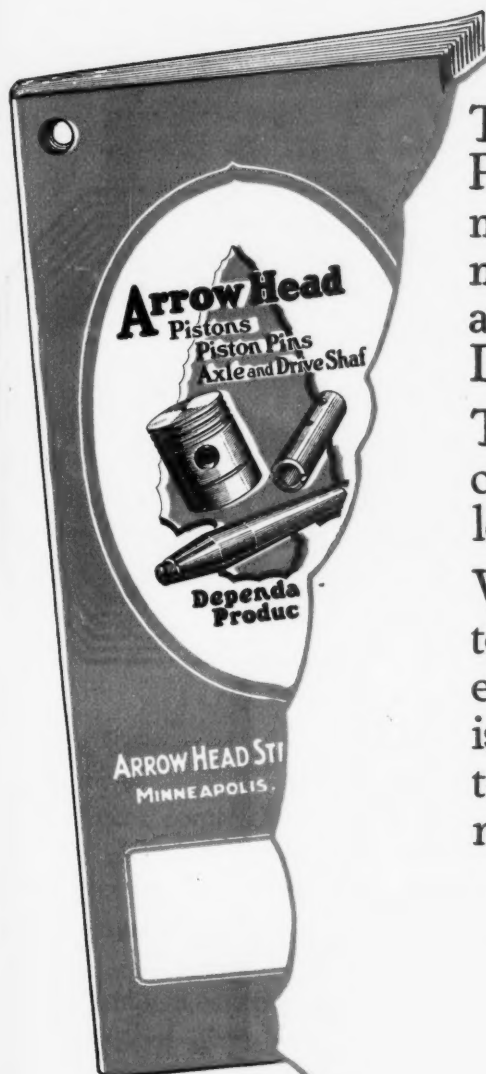
DEALERS—The Stromberg Windshield Wiper is giving perfect satisfaction on every car so equipped. Sell it—make more money—the demand is enormous. Get busy now and be in a position to give your trade what it wants—the best. Call our distributor or write us at once for complete information relative to "live dealers" sales proposition.

Stromberg Motor Devices Co.

65 E. 25th St., Chicago, Ill.



Repair Men Everywhere Are Rapidly Recognizing Arrow Head Superiority



The demand for Arrow Head Products is on the upgrade. Every month more Arrow Head Pistons, more Arrow Head Piston Pins, and more Arrow Head Axle and Drive Shafts are used.

Time has proved the superiority of their quality. The trade has learned their value.

With micrometers that read in tenths of a thousandth of an inch, every piston, piston pin and shaft is checked and held to the closest tolerances. There are no finer parts made than Arrow Head.

Write today for the new Arrow Head Book outlining Ten Opportunities for Motor Repair Men—and also our recommendations for rebuilding motors—and a complete list of Arrow Head Pistons, Pins and Shafts for cars, trucks, tractors, airplanes, etc. A valuable book—free on request.

**ARROW HEAD
STEEL PRODUCTS
COMPANY**
MINNEAPOLIS
MINNESOTA

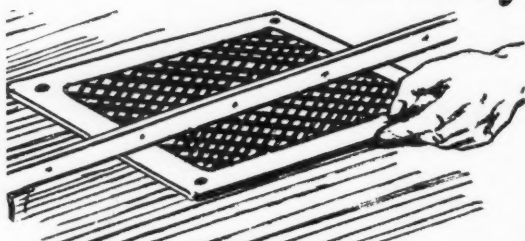
132 Drilling Machines and Electric Drills —unlike in every respect but one!

These makers (they include practically all the well known drill manufacturers) have diverse opinions regarding the proper design of the parts used in their drilling tools.

But on one point they are all agreed. That is, that Jacobs Chucks are the one quality part for which there is no substitute.

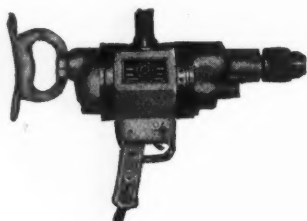
Such undivided confidence is the result of much experimenting to determine which chuck would best qualify for their respective products. The fact that Jacobs Chucks are now so generally specified by the better tool builders suggests the precaution to look for this part on the new equipment you purchase.

Your Drill can help make money this Winter



A big market now for car heaters, radiator covers, Motometers, windshield wipers and other winter conveniences. Get this good business but don't lose the profit on the installation. A portable electric drill will save you time over hand methods and insure a neat inexpensive job that will be profitable for you.

—and on the Drill
*“with the pistol grip
and trigger switch”*
you will find Jacobs
Chucks—



THE BLACK & DECKER
MFG. CO.
TOWSON, MD.



A feature found in no other chuck

It is the Tooth and Sleeved Key Device. By its use the drill, tap or other tool is most easily and securely tightened. This powerful “gripping” eliminates the danger and time loss of slipping drills.

Greater drill accuracy is made possible by this and other exclusive Jacobs' features.

These features have made Jacobs “The World's Largest Producer of Drill Chucks.”

THE JACOBS MFG COMPANY, HARTFORD, CONN.

*This advertisement inserted in the interest
of better service equipment in general and
the use of Portable Electric Drills in particular*



Opens and Shuts Itself!



No Mystery

Winterfront has no connection with the motor. It is automatic and positive under all driving conditions.

The shutters are open and closed by the action of thermo-cells that are in contact with the upper part of the radiator.

When the car is cold the thermo-cells are collapsed and the shutters are closed.

Before the motor overheats the thermo-cells will begin to expand.

The action is communicated direct to the shutters which gradually open as wide as needed.

When it drops a few degrees the cells begin to contract and the shutters begin to close. They close just far enough to maintain the motor at highest efficiency.

Make this explanation to your Winterfront prospects and you will make a sale.

Give the car a

Any Motor Will Run Better With A
WINTERFRONT
TRADE MARK REG. U.S. PAT. OFF.
for Christmas

A happy car at Christmas time means a happy driver.

And a comfortable driver, too.

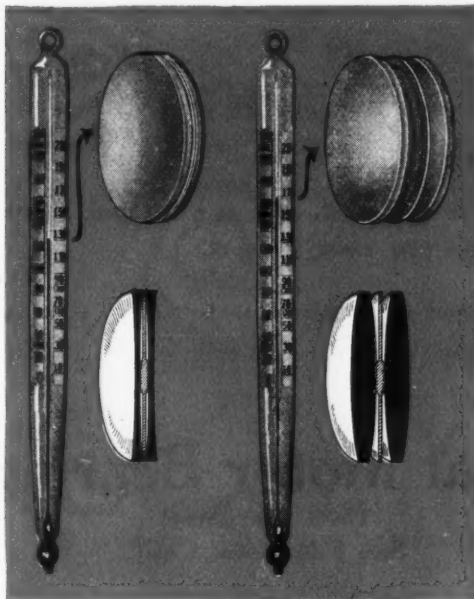
It means a driver who is free from worry over freeze-ups.

It means a driver who is saving oil and gas.

In other words every time you put a Winterfront on a car you make a friend for your shop.

As well as a clean profit of several dollars, without installation expense or servicing.

Distributors in principal jobbing centers have stocks ready for shipment. No time to waste. If you aren't lined up, use the coupon today.



**PINES WINTERFRONT
 COMPANY**

412 N. Sacramento Blvd. Chicago, Ill.

PINES WINTERFRONT CO.
 412 N. Sacramento Blvd., Chicago, Ill.

Gentlemen: Please send us name of distributor and 1924 sales plans as per your advertisement in December 4th Motor Age.

Name

Street

City

State

This Coupon brings your free set

We don't want you to believe that National Shims offer you the greatest single improvement in shim construction yet devised—not on our say so.

We don't want you to invest one five cent piece on the chance that you might find National Shims the greatest time saving—labor saving—back saving—patience saving shim you ever had in your hands.

What we want to do is to **give** you a set of National Shims—for any job you will have in your shop—absolutely without cost to you.

Then, you put these shims in a motor. Notice how simple the idea behind them is. Keep track of the hours of work they save you. Notice you can take off as many layers as you want to. And then, if necessary **you can put these layers back!**

Put them to every kind of test you can imagine. Figure what they save you. Figure how little they cost you.

Then, if you're not sold, forget National Shims. If you are sold, order from your jobber.

You never heard of a fairer proposition, did you? Mail the coupon today. Do it now while you're thinking about it.

National Motor Bearing Co.

1609 Pine Street
San Francisco, Calif.

NATIONAL SHIMS

THIS COUPON GOOD FOR ONE FREE SET OF SHIMS

National Motor Bearing Co.,
1609 Pine Street,
San Francisco, Calif.

Please send me a free set of
National Shims.

Name.....

Address.....

City.....

State.....

Make of Car.....

Jobber's Name.....

Each National Shim is a complete unit. A number of layers of shim stock varying in thickness from .003 up. Held together with a drop of solder in a unique and practical manner. With a pen knife, as many layers as necessary can be removed. Removing the layers does not destroy them. They can again be put back if necessary.

No Solder Between Leaves.

No Chance for Shim Compression.

Unused Layers are Saved.

Low in Price.

Sold in All Sizes.

Save Time and Money.

Save Backbreaking Work.

Sold in Sets for Any Car.





Protection Even Against Forgetfulness!

You Can't Forget to Lock Your Ford When It Is Equipped With an ELECTROLOCK

Merely by a thumb-push on the switch, the ELECTROLOCK shuts off the ignition and protects the car from all unauthorized use. Nothing but the key will start it. Outside current will not make it operate.

Safety against accidental operation of the lock when the car is in motion, prevention of theft, and automatic operation—these three basic features of the ELECTROLOCK have finally solved the car-locking problem.

The ELECTROLOCK is legal in every state and is approved by the Underwriters' Laboratories. It earns the lowest theft insurance rate. It is classified in Group I, new standard, effective Jan. 1, 1925.

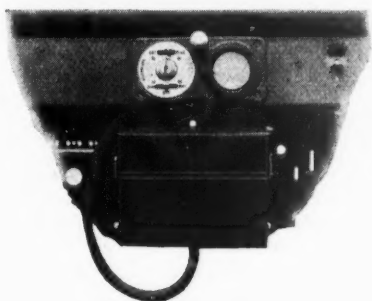
See the lock or write for full details immediately. Be the first to introduce automatic protection in your territory.

MITCHELL SPECIALTY COMPANY
Philadelphia, Pa.

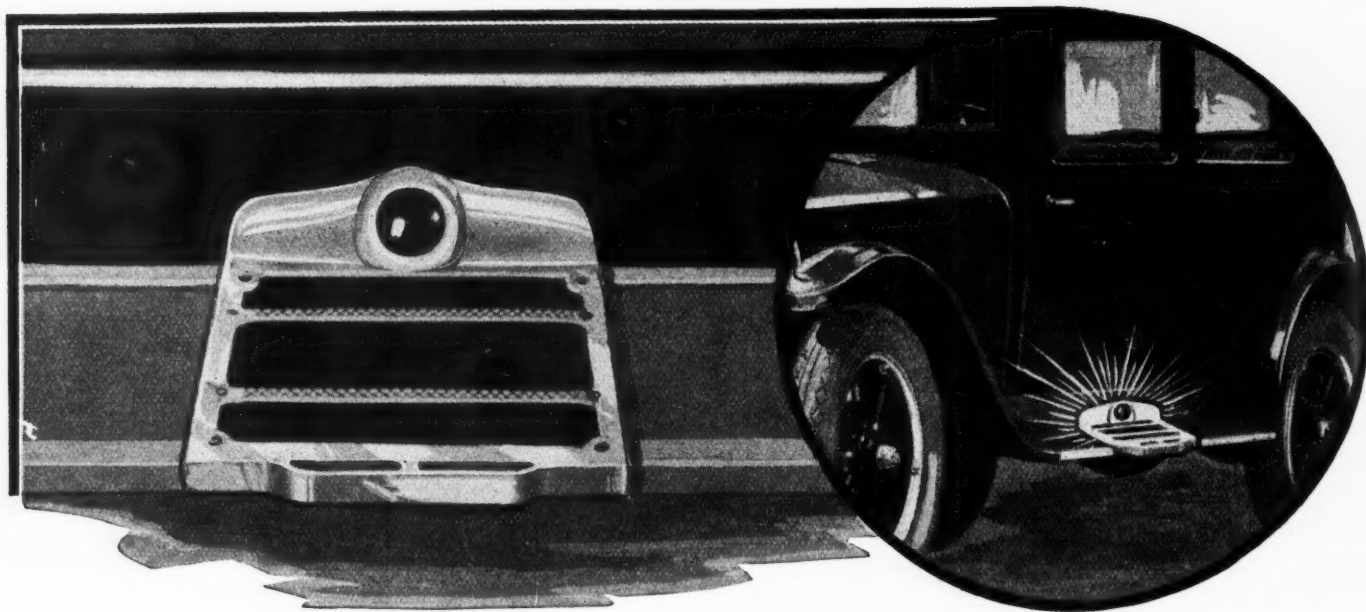
Manufacturers of Automobile Body Hardware Since 1914

Electrolock

YOU CAN'T FORGET TO LOCK IT!



*Installation
Installation is very simple. Merely
replace original Ford Switch
Panel with the ELECTRO-
LOCK panel. Twenty
minutes at most will
do the job.*



National
ALUMINUM LINE

Signal-Light Step Plate

Almost over night this handsome, practical signal-light step plate jumped to the head of the list in equipment sales. It holds an irresistible appeal for the motorist, combines the virtues of a step plate, kick plate and running board signal light.

The light fits into a handy, invisible socket in the rear of toe guard, and connects to the tail or head light wires or to a separate switch.

The lens is green for the right running board and red for the left—indicating who has the right of way. Also furnished with plain white frosted lens if desired.

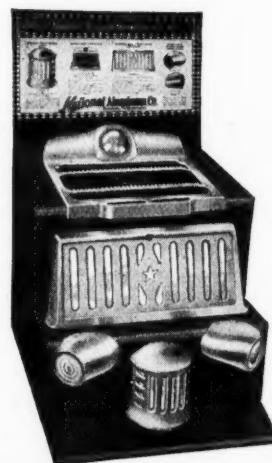
The step plate is cast aluminum, highly polished and has a foot scraper. Made in two sizes to fit all running boards. The aluminum cross strips hold the rubber insert mats firmly in place—a distinct feature found on no other step plate, preventing rubber mat from buckling—adds considerably to the value of step plate, and wearing surface of the mat.

Packed in Appropriate Cartons for Christmas Trade

Prices compare favorably with just ordinary step plates without lights. Packed one pair to a carton—ready to connect up. Step plates of the same design are furnished without signal lights to be used under rear door of four door cars.

This beautiful Signal-Light Step Plate will enhance the beauty of the finest car. It's a worthy addition to the National Aluminum line, and one that dealers will find a quick turnover item. A sample order will tell the story.

Write to your jobber and ask for prices or write us



FREE ATTRACTIVE "SELF-SALES" COUNTER DEMONSTRATOR

The remarkable success of our counter demonstrators in creating sales for the items in the National line prompted us to design a self-sale demonstrator for Running Board Signal Lights as follows: Signal-Light Step Plate—Illuminated Signal Kick Plate—Right-O-Way Running Board Signal Lights and Running Board Signal Lamp. The stand is sent free with an order for the five items which will be mounted. It is a beauty, all wired up ready to connect if desired to battery or transformer, making an attractive display for counter or window, especially during the holiday season.

National Aluminum Co. (Dept. 21) Racine, Wisconsin



A DISTRIBUTOR IS KNOWN BY THE COMPANY HE KEEPS



When you come into the circle of Fafnir distributors, you can be sure of being in good company. And good company is mutually beneficial in selling a line.

Your associates are the leading ball bearing distributors in every considerable city between New York and the Golden Gate, a carefully selected group of men.

Your organization is the Fafnir organization, which extends its service and its interest to every part of the country.

Your line is high quality ball bearings of every type for the replacement field, carrying the Fafnir trade mark as a guarantee of your service.

If this kind of company means anything to you, you will seize the chance to become a Fafnir distributor. Your chance is now.

THE FAFNIR BEARING CO.

New Britain, Conn.

DETROIT

CHICAGO

FAFNIR

BALL BEARINGS

You've got to hang your stocking up to get it filled

The fellows who are making the real profits out of motor re-conditioning have taken a tip from this childhood phrase.

When you talk to the fellow driving a worn, pepless motor about motor re-conditioning, you're hanging up your stocking for winter profits.



He'll have both ears open when you explain how a re-conditioning job with McQuay-Norris parts will restore lost power and economy to his worn motor.

With the new low prices on McQuay-Norris Leak-Proof and Superoyl Rings you can make him a price that will sell the job. When you collect the profits you'll realize you didn't hang your stocking up in vain.



McQUAY-NORRIS

PISTON RINGS - PISTONS - PINS - BEARINGS

Remember

The best profits are in the best parts. Poor replacement parts can ruin a good mechanical job.

Since the new PIERCE-ARROW

Series 80

was announced on

August 1, 1924

the number of dealers handling

Pierce-Arrow products

has been tripled

The Pierce-Arrow *Series 80*, with a price range from \$2,895 to \$4,045, has opened up a field for Pierce-Arrow motor cars *eighteen* times as great as formerly existed in *your* territory. Write us for the facts.

Some idea of the huge facilities of the Pierce-Arrow Motor Car Company can be obtained from the fact that the plant, which includes sixteen modern factory buildings, occupies a site of 45 acres. The total floor area is approximately 1,400,000 square feet. . . Pierce-Arrow Products include passenger cars of two types: the Pierce-Arrow Dual-Valve Six and the Pierce-Arrow *Series 80* in seven body styles . . . Pierce-Arrow Motor Busses . . . Pierce-Arrow Heavy Duty Motor Trucks.

THE PIERCE-ARROW MOTOR CAR COMPANY
Buffalo, N. Y.





The profit possibilities in every Brunner Air Compressor

If you had to go back to the days of the bicycle pump, painting and cleaning by hand and numerous other operations that required expensive manual labor to perform—

You would soon lose the profits that have been made possible through the introduction of the Air Compressor which does all this work at a fraction of what it used to cost.

This indispensable unit has completely changed shop practice and

has placed profit in the hands of Garage and Service Station owners throughout the civilized world—profits that were never thought possible.

A Brunner Compressor is better for you because it is made by pioneers. It is the most highly developed type of compressor—it is the cheapest to operate—it is the best to own because it is built better and lasts longest.

If you haven't got your "Brunner" — make arrangements today to put one to work in your shop.



There's Money in the Air from a Brunner Compressor

"AIR Profits" is a booklet full of money making ideas for the progressive garage owner. Send for this booklet and get the benefit of Brunner experience.

Brunner Mfg. Co., Utica, N. Y.

Oldest and largest Builders of Garage Air Compressors in the World

BRANCH OFFICES:
Cincinnati, O.; Kansas City, Mo.; San Francisco

EXPORT OFFICE: Utica, N. Y.



BRUNNER Model 967

*Heavy Duty Assembled Unit
Powerful 2 H. P. motor, unloader controller, Brunner Special Belt tightener. 65 gallon, 200 lb. seamless tank, capacity 7.1 cu. ft. per minute. Will easily handle up to six air drive gasoline pumps and up to twenty air lines.*



GOLDENROD?

*The name of a flower whose COLOR
has been chosen to represent*

Service Equipment

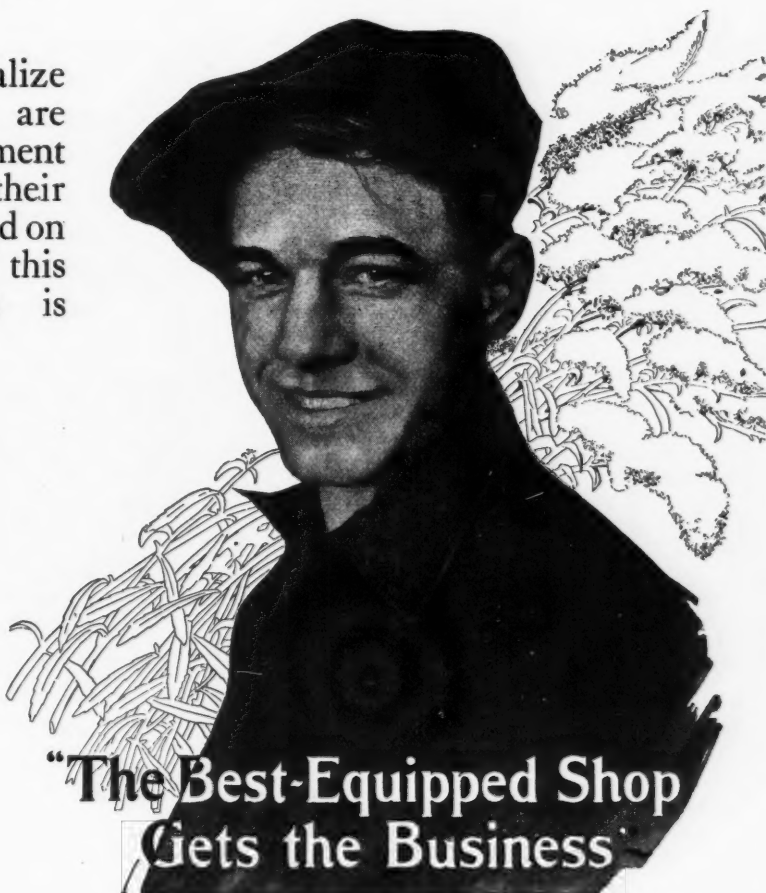
MANY jobbers who specialize on Service Equipment are grouping all the Service Equipment they handle in one section of their catalog and this section is printed on colored paper. The color of this Service Equipment Section is Goldenrod.

MEMBERS

Service Equipment Associates

Albertson & Co., Inc.
Sioux City, Iowa
T. R. Almond Mfg. Co.,
Ashburnham, Mass.
Bastian-Blessing Company (Rego)
Chicago, Ill.
The Black & Decker Mfg. Co.
Towson, Md.
Bonney Forge & Tool Works
Allentown, Pa.
Brunner Mfg. Co.
Utica, New York
Burton-Rogers Company
Boston, Mass.
Continental Sales Corp.
Columbus, Ind.
Kellogg Manufacturing Co.,
Rochester, N. Y.
The Manley Mfg. Co.,
York, Pa.
Wood-Imes Mfg. Co.,
Minneapolis, Minn.
Oxweld Acetylene Company,
New York, N. Y., and
Chicago, Ill.
Stevens & Company,
New York, N. Y.
Weaver Mfg. Company,
Springfield, Ill.
Weidenhoff Products,
Chicago, Ill.
Wright Mfg. Co.,
Lisbon, Ohio

SE



"Larry" is the name of the happy mechanic whose work is made lighter and whose pay envelope is made fatter by the use of up-to-date Service Equipment.

**SERVICE EQUIPMENT ASSOCIATES
TOWSON, MARYLAND**

*Or Communicate with any member of
Service Equipment Associates listed at left*



DO you want Precision Tools that are handy and easy to use, reliably accurate, and that will last a *lifetime*? Then follow the example of machinists, toolmakers, patternmakers and others who work metal to close limits, and get Starrett. None better at *any* price.

THE L. S. STARRETT CO.

*World's Greatest Toolmakers
Manufacturers of Hacksaws Unexcelled*

ATHOL, MASS.

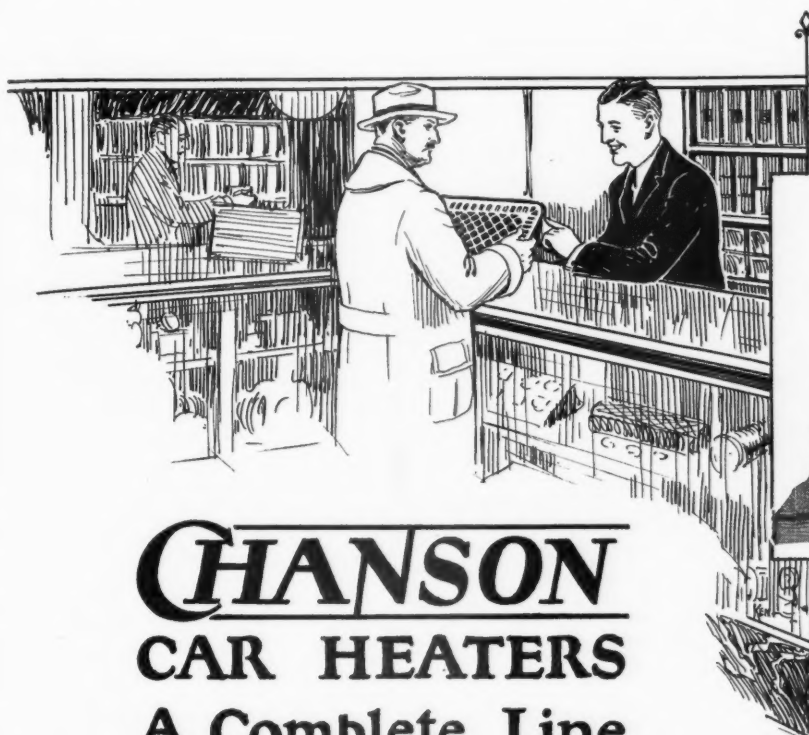
Starrett



**These are the Tools
that are made for
your Work.**

STARRETT MICROMETERS
STARRETT COMBINATION
SQUARES AND SETS
STARRETT CYLINDER
GAGE
STARRETT THICKNESS
GAGE
STARRETT UNIVERSAL
DIAL TEST INDICATOR
STARRETT STEEL TAPES
STARRETT CALIPERS AND
DIVIDERS
STARRETT RATCHET
WRENCH SET
STARRETT HACKSAW
FRAMES AND BLADES
STARRETT TELESCOPING
GAGE

Write for the new Starrett Catalog
No. 23 RB describing over 2200
fine Precision Tools.



CHANSON CAR HEATERS A Complete Line at Better Prices

Don't forget that window displays sell heaters

If you carry CHANSON HEATERS, you can sell every car heater prospect who comes to your counter.

For, with this CHANSON line you will have heaters of the correct size for every car, finished in keeping with the best of them and at a lower price than owners are accustomed to pay for such equipment.

EASY TO SELL

Tell your prospect that this heater will give all the heat he can use; that it is noiseless and guaranteed not to leak. Let him look at it and sell himself.

If he is technically inclined, show him that the patented CHANSON BUTTERFLY VALVE controls 97 per cent of the heat as against the 65 per cent of the ordinary valve.

Show the ample size of the cast iron heating element and explain how the baffles extract all the heat and insure a perfectly silent exhaust.

You can show the most skeptical that the CHANSON HEATER gives more heat for less money.

EASILY INSTALLED

One size of the CHANSON VALVE fits all cars and installation is made with the least possible labor. The fact that any heater and any valve can be fitted to any car keeps your stock at a minimum.

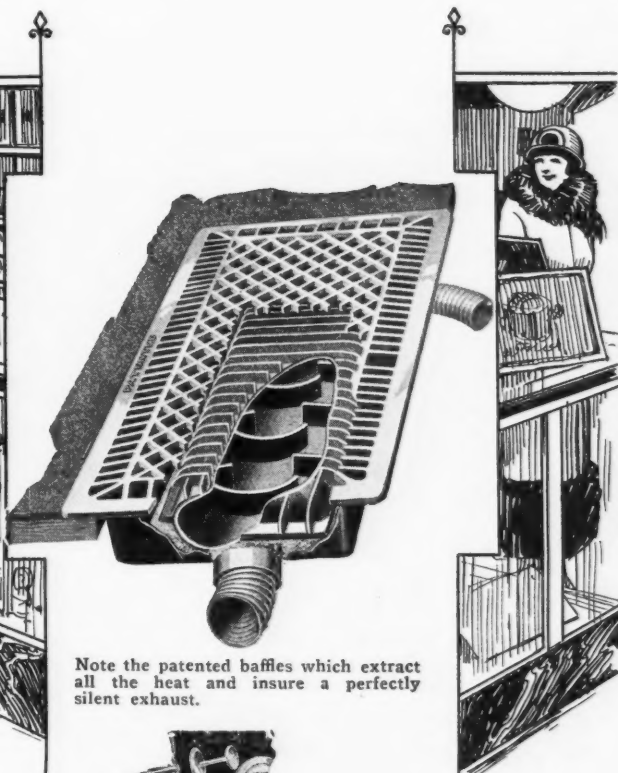
ChanSON Heaters are sold exclusively through the Jobber. Get in touch with your Jobber without delay. He will send you literature; and quote prices and discounts which will mean substantial profits to you.

CHANNON-HUGHSON CO.

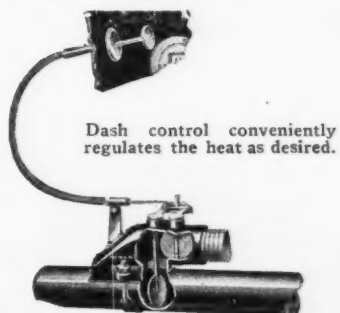
Sales Dept.

THE ZINKE COMPANY

1323 S. Michigan Ave.
Chicago, Ill.



Note the patented baffles which extract all the heat and insure a perfectly silent exhaust.



Dash control conveniently regulates the heat as desired.

Compare the Valves

These illustrations tell the story of the superiority of the CHANSON VALVE.

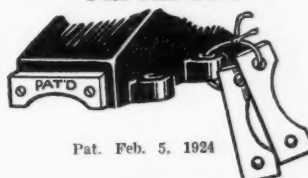


An ordinary tongue valve controls approximately 65% of the exhaust.

The CHANSON valve controls 97% of the exhaust.

This patented feature, alone, will sell many CHANSON HEATERS for you.

Fits All Cars



Pat. Feb. 5, 1924

The CHANSON HEATER AND VALVE can be fitted immediately to any car without hand hammering of sheet metal or filing of iron castings.

Write your Jobber About CHANSON HEATERS

These heaters are sold exclusively through the Jobber on a policy which gives the Jobber full protection and assures the Dealer of square treatment.



“Shot” Armatures should pay you a profit!

Make the H. M. Fredericks Co. your armature rewinding department. Exchange “shot” armatures for rewound ones just as though our stockroom were in your own garage.

Every time you get an armature “pretty well shot” instead of trying to sell the man a new one or risking an uncertain local rewind job—mail it to us. The day we receive it, a rewound armature is shipped to you. This rewound armature is guaranteed to give service equal to that of a new armature. The cost is less than half. *Guaranteed* quality at a price wins customer good-will. The low price allows for a large margin of profit *for you*.

Thousands of repairmen in all parts of the country have found this a convenient and highly profitable arrangement. They are making “shot” armatures pay them a profit! Why not you?

Our booklet, “Low Cost Armature Winding Service,” will interest you. Mailed free to automobile men on request.

Price List

Net Prices

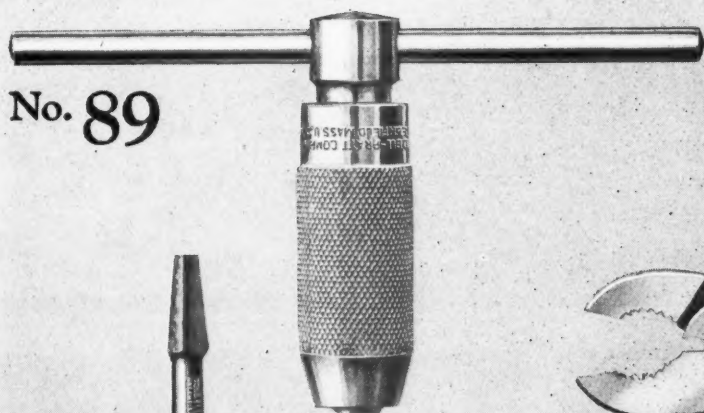
Ford Generator Armatures	\$1.95
Ford Starter Armatures	2.00
Any Make of Two Unit Generator Armatures	4.95
Any Make of Two Unit Starter Armature Rewound	6.75

Motor Generator

Northeast	\$11.00
Simms, Huff	7.00
Delco	12.00
Dyneto	12.00
Detroit	12.00
Any Vacuum Cleaner Armature	3.50

H.M.FREDERICKS CO.
Armature Winding Specialists
 Lock Haven Penna.

No. 89



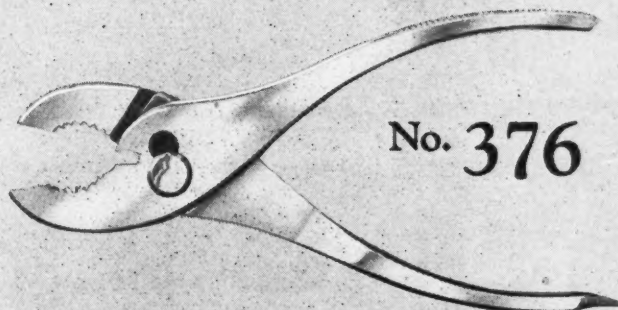
No. 478



No. 41



No. 376



Handy tools for service work

THE tools shown on this page are taken from the Goodell-Pratt Catalog No. 15, which shows all of the 1500 famous Good Tools.

Many of the Goodell-Pratt Tools are made especially for garages, service stations, auto mechanics, accessory dealers, and motorists.

Write for your copy of Catalog No. 15. It's free to you.

Tap Holder No. 89, price 80¢. Convenient for holding small drills, taps, reamers or other small tools to be turned by hand. Capacity up to $\frac{3}{8}$ inch.

Washer Cutter No. 41, price \$2.40. Blades are adjustable both as to length of cutting edge and as to position. Can be removed for re-sharpening. All steel. Weight 8 oz.

Hand Vise No. 97, price \$4.00. Has taper square shank that can be removed from the handle and held in any two-jaw chuck. Jaw faces are $1\frac{3}{8}$ in. x $\frac{9}{8}$ in. Jaws open to $1\frac{1}{2}$ in. Length $8\frac{1}{2}$ in.

Circular Glass Cutter No. 478, price \$1.10. The graduated beam

can be set to cut circles of any size from 2 to 12 inches in diameter. Rubber base to prevent slipping. Weight 5 ounces.

Combination Pliers No. 376, price \$1.20. Has a cutting slot, a pipe grip, and is provided with a slip joint. One handle has a screw-driver end. Length $6\frac{1}{2}$ in.

Machinist's Hammer No. 559, price \$1.80. High-grade tough steel, properly hardened. Temper scientifically distributed over the face and peen. Hickory handle. Length 12 inches; head 16 ounces.

Cold Chisel No. 629, price 90¢. Forged from high-grade octagon tool steel. Hardened, ground and tempered. Point $\frac{7}{8}$ inch wide.

GOODELL-PRATT COMPANY, GREENFIELD, MASS., U. S. A.

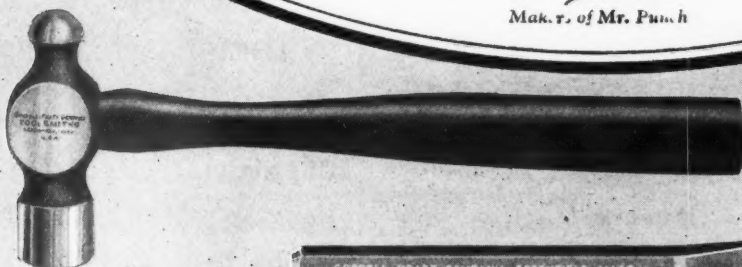
Toolsmiths

Mak. r. of Mr. P. Smith

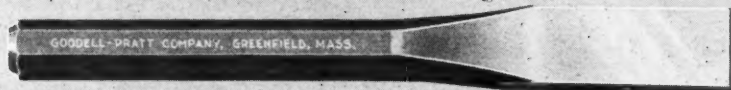
No. 97



No. 559



No. 629



GOODELL-PRATT

1500 GOOD TOOLS

Our Super-Salesman

THE jobber is our super-salesman.

In our relations with the jobber, just as with every member of our own sales staff, our business conduct must command eager loyalty.

Each jobber, like each salesman of our own, deserves our personal interest and encouragement.

Every jobber, intimately a part of our organization, is as welcome as

our own men to all assistance we can give on any problem.

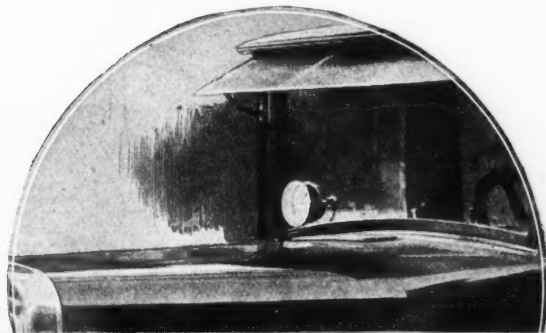
Assuredly, our super-salesmen are given the best that there is in us, because only in that way can they do their best for us.

The power of this fair, happy, interested attitude is reflected in most pleasant and profitable relations between our jobbers and the retailers they serve so well.

GENERAL AUTOMOTIVE CORPORATION, CHICAGO
MONOGRAM ORIGINAL SELF-LOCKING RADIATOR CAPS

Inshield Senior

Black or Nickel Finish.
5½" in diameter. A beautiful big light.

\$8.75**Inshield "8"**

Black or Nickel Finish.
4½" in diameter. Fits all cars. The universal light.

\$7.50

INSHIELD

TRADE MARK REGISTERED U.S. PAT. OFF.

DRIVING LIGHT

The Powerful Driving Light That's **INSIDE** the Windshield—Not **THROUGH** It

Easily, Quickly and SAFELY Installed on any model of any car without cutting the windshield glass

HERE is the Christmas accessory that is already moving so fast off the dealers' shelves that our jobbers are beginning to wire us for help.

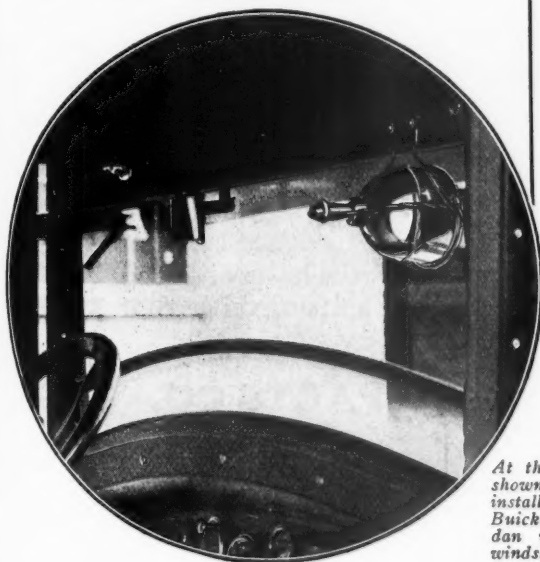
And no wonder—car owners everywhere are learning about this new driving light that robs night driving of one of its greatest dangers.

Inshields for Christmas are packaged in cheery holiday wrappings that can be easily removed in case some of your stock carries you beyond the holidays. This permits you to order **AT LEAST** enough for the demand that is constantly increasing for this wonderful accessory.

PATENTED November 8, 1921; October 30, 1923. We will vigorously protect our patent rights.

The Inshield can be safely installed on any car, whether two-piece windshield, one-piece swing windshield or one-piece lift windshield (such as Cadillac, Buick, Oakland and Chandler 1925 closed cars). Ask for Inshield Senior-A or Inshield 8-A for lift windshields.

The Inshield is a beautiful light made of highest quality brass throughout. Beautifully finished in heavy nickel or black enamel, with genuine silver plated reflector and National Mazda 21-candle-power bulb. Inshield switches contain genuine Bakelite plugs assuring freedom from all switch trouble.



At the left is shown Inshield installation on Buick 1925 Sedan with lift windshield.



"Dress up" the Ford with an INSHIELD Easily Installed

At right is shown Inshield installation on Rollin Sedan with one-piece swing windshield.



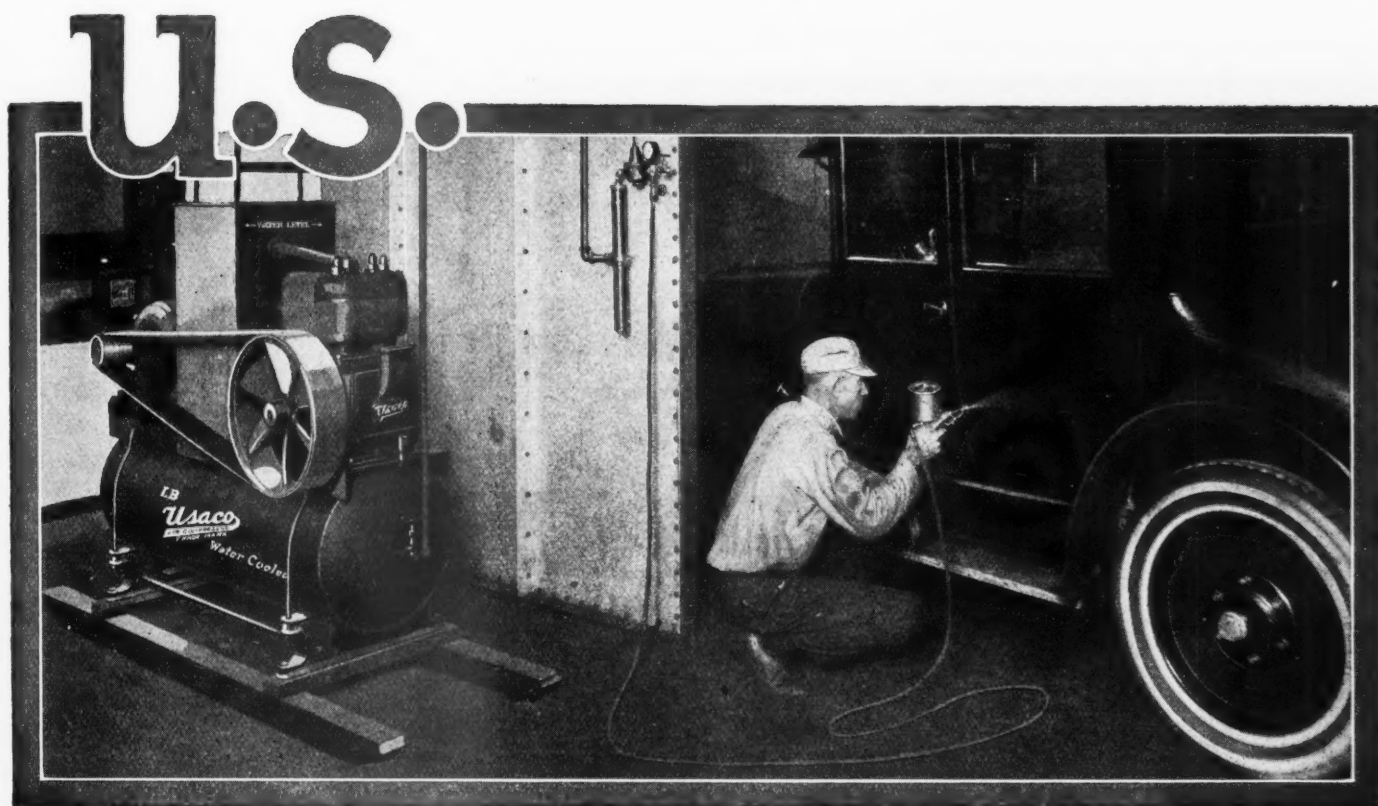
Genuine Inshields Made Only By
THE INSHIELD PRODUCTS COMPANY, Department 8, TOLEDO, OHIO



AJAX JACKS are designed so that they will go under the lowest balloon equipped car and have a lifting range that will take care of ordinary cars.

AJAX AUTO PARTS CO.
Dept. A512 Racine, Wis.

AJAX RED
BASE **JACKS**



How Many Cars Do You Paint Now?

You can Deliver Four Times As Many By Putting In a U. S. Paint Spraying Outfit and Applying the New Lacquer Finishes

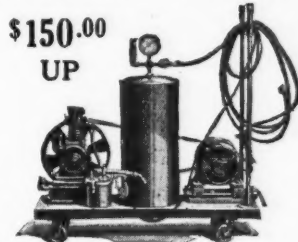
THE new lacquer finishes are sweeping the nation. Four wheel brakes and balloon tires all over again! Soon the old enamels and finishes will have passed out almost entirely, and with them shops that continue to apply them.

Wise paint men, foreseeing the trend, are buying equipment to put them in on the ground floor of the vast new business the new lacquers are creating. These shops will make the real money.

Lacquer finishes are successfully and beautifully applied with U. S.

Spray Painting outfits. And so quickly you can finish four cars in the time it ordinarily takes to finish one by the old methods.

U. S. Outfits complete with compressor, spray gun, hose and everything necessary for applying the new lacquers, are made in $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{2}$ and 5 h.p. sizes. The portable outfits handle one to two spray guns; the LB-5 handles three to five. Prices from \$150 up.



Write now for complete information on U. S. Paint Spraying Equipments, stating your requirements.

THE U. S. AIR COMPRESSOR COMPANY
5304 Harvard Avenue CLEVELAND, OHIO

U.S. Air Compressors

Usaco
TRADE MARK

BUNTING BUSHING BEARINGS

PATENTED

A New Source of Profit

BUNTING BUSHINGS enable the automotive service man to build up a substantial permanent business upon the most constant repair and replacement opportunity in his market today. Cars are always going to need new bushings.

Why should the garage man prefer Bunting Bushings? Because the job demands the highest quality obtainable. Because Bunting Bushings are recognized by trade and public as the high standard of quality. Because Bunting is helping the service man sell Bunting Bushings to the car owner.

Bunting Bushings are made for replacement at points of greatest wear in all popular automotive vehicles.

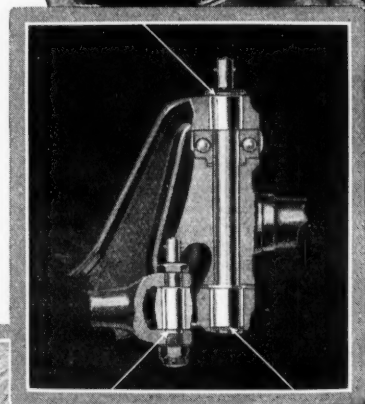
All leading distributors have complete stocks. List No. 18 showing Piston Pin Bushings, List No. 111 showing Spring Eye and Shackle Bolt Bushings, and List No. BB showing Steering Knuckle and Tie Rod Bushings will be sent on request.



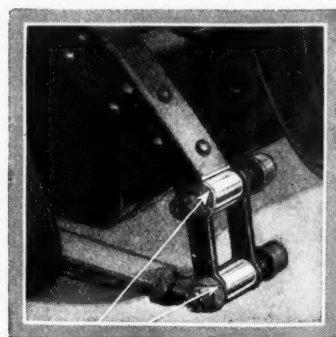
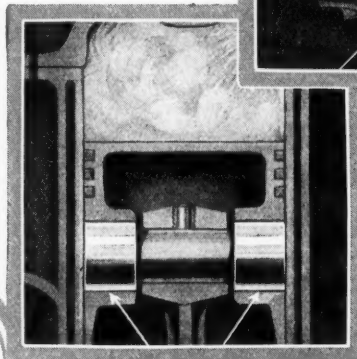
Bunting Bushing Bearings are packaged in strong attractive cartons.

Nothing less than Bunting quality will give good service under the operating stresses peculiar to piston pin operation.

Rust proof, durable, Bunting Phosphor Bronze Bushings are vitally necessary in spring applications. Spring bushing replacement is an easy, quick job.



Car control and driving ease depend much upon good bushings in the steering mechanism.



THE BUNTING BRASS & BRONZE CO.
TOLEDO, OHIO

BRANCHES AND WAREHOUSES AT

NEW YORK
245 West 54th St.
Columbus 7528

PHILADELPHIA
1330 Arch St.
Spruce 5296

CLEVELAND
710 St. Clair Ave., N. E.
Main 5991

SAN FRANCISCO
198 Second St.
Douglas 6245

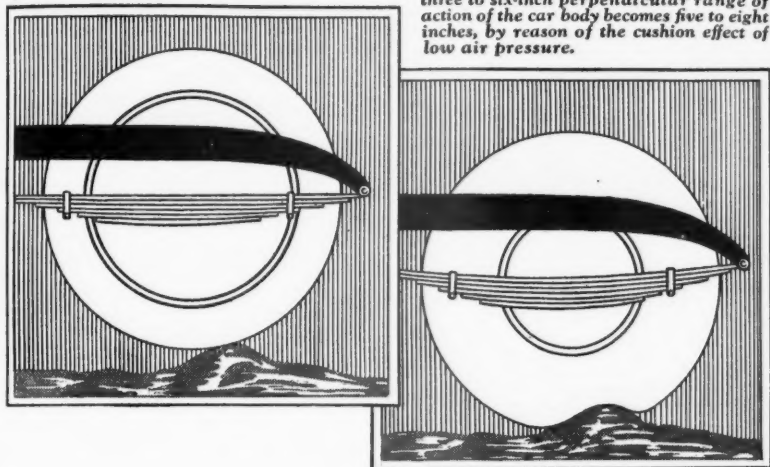
CHICAGO
722 S. Michigan Ave.
Wabash 9153

BOSTON
36 Oliver St.
Main 8488

Why Balloon Tires Need these Gabriels



With balloon or low-pressure tires, the three to six-inch perpendicular range of action of the car body becomes five to eight inches, by reason of the cushion effect of low air pressure.



Gabriel is the only spring control device officially, by patent and copyright, entitled to the name Snubber. To make certain that you have genuine Gabriel Snubbers installed on your car, go to the authorized Gabriel Snubber Sales and Service Stations which are maintained in 2200 cities and towns. Motor car dealers who are desirous of assuring their customers of greatest satisfaction recommend Gabriel Snubbers and many install them as well.

Satisfactory control of balloon and low-pressure tires demands both the free play and the increasing braking action which only Gabriel Balloon-Type Snubbers provide.

Gabriel free play means that the soft air-cushion which is the big feature of low-pressure tires is free to absorb small bumps without passing them on to the occupants of the car.

Gabriel increasing braking action is light at the beginning, becoming more powerful, instead of being powerful

at first and rapidly tapering off.

That means the elimination of violent upthrow caused by the larger bumps, and also the elimination of galloping, pitching and rolling.

Motorists everywhere are learning the Gabriel facts—from the Gabriel national advertising, and from testimony of their friends who use them.

Sell Gabriel Balloon-Type Snubbers to your trade. Write for details about the new Gabriel sales proposition.

GABRIEL MANUFACTURING COMPANY
1415 East 40th Street, Cleveland, Ohio
Gabriel Manufacturing Company of Canada, Toronto, Ont.
~ Sales & Service Everywhere ~

Balloon
Type

Gabriel Snubbers

Best for All Tires Carrying Low Air Pressure

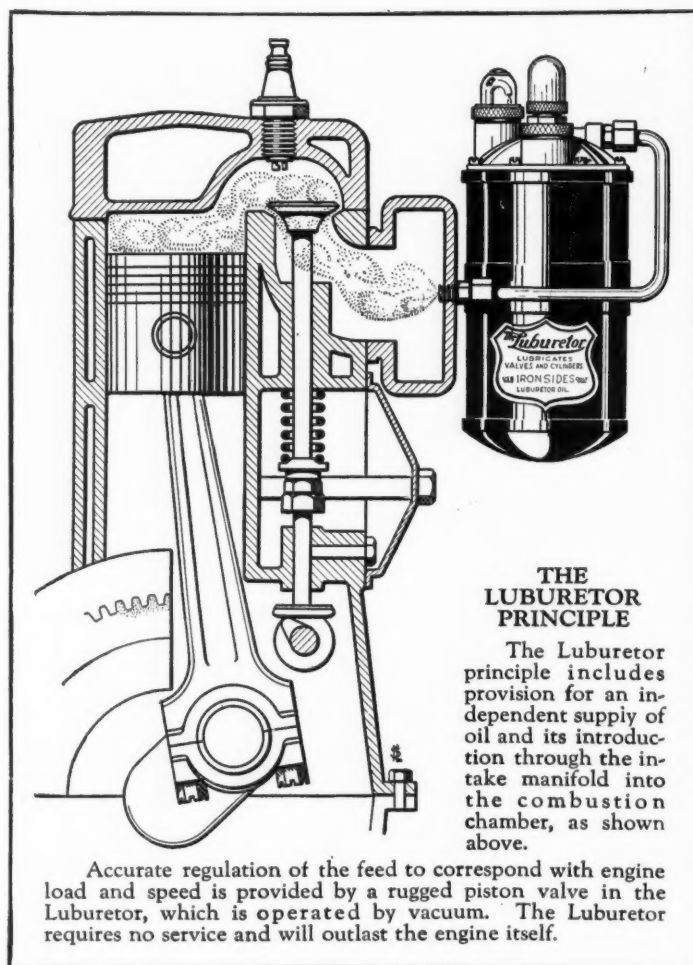
AN INTRODUCTION TO THE AUTOMOTIVE INDUSTRY

A BASIC IMPROVEMENT in Engine Lubrication

AUTOMOTIVE engineering effort today is very definitely directed toward developing longer motor car life and lower upkeep costs. Refinement and perfection of lubrication is recognized as an important means to this end. Excessive wear of cylinder walls, faulty valve action, unbalanced and diminished compression, crank case dilution and other engine troubles result very largely from inadequate lubrication in standard design.

To depend upon pumping crank case oil, a heavy oil for bearings, past the pistons for upper cylinder wall

lubrication and upon the pumping action of valves to reach the full length of valve guides, is to



Accurate regulation of the feed to correspond with engine load and speed is provided by a rugged piston valve in the Luburetor, which is operated by vacuum. The Luburetor requires no service and will outlast the engine itself.

employ indirect methods and an oil far from suitable for the purpose.

In contrast "Top End Lubrication," or the introduction of penetrating and heat resisting oil, undiluted and fresh, through the intake manifold into the combustion chambers is direct and positive. The Luburetor supplies the mechanical means of providing top end lubrication.

The use of a Luburetor therefore insures long engine life and economical service uninterrupted by most of the common repair and maintenance operations such as valve grinding, replacement of pistons and rings, reboring of

cylinders and over-frequent changing of crank case oil. The Luburetor is an enemy to engine depreciation.

A complete description of the Luburetor and the selling plan may be had by substantial dealers and distributors.

We are rapidly completing a national distributing organization. Write or wire for Luburetor Folder No. 10L.

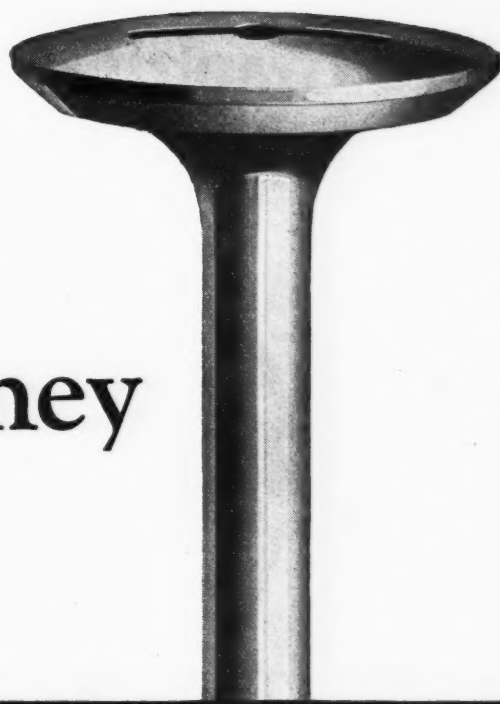
THE LUBURETOR COMPANY
471 EAST BROAD STREET, COLUMBUS, OHIO

The Luburetor

TRADE MARK REG.

FOR ALL PASSENGER CARS, TRUCKS AND TRACTORS

Give Him a Longer Run for His Money



WHEN a man's car has lost pep for the pick-up and power for the hills, he loses 90% of the fun of owning it.

And that's *really* what he wants you to restore.

When he pulls into your service garage, and you find that it's a case of battered, burned, and worn-out valves, think twice before you spend his money.

Perhaps you can fix up the old valves—but will it pay *him*?—and will it pay *you*?

Better be *sure* that he gets a *longer* run for his money by installing new Thompson Silcrome Valves.

Over 50 leading automotive builders use these remarkable valves as standard equipment. They use them in preference to cheaper ones because Thompson Silcrome Valves give unfailing service under condi-

tions of red heat, warping and wear that destroy the efficiency of other valves in a few hours.

Don't ever believe that car owners *prefer* to have you put in cheap valves. When you tell them that Thompson Silcrome Valves are used in airplanes and racing cars because only these valves will stand the extreme punishment they get in those motors, you'll find your customers wanting the same good valves for their cars.

IMPORTANT

Thompson Silcrome Valves are now being supplied to the replacement trade through selected jobbers and parts distributors. Ask for them *by name*. They are furnished to fit all makes and models of cars and trucks, with regular and oversize stems. If you have any difficulty in getting them, write us!

THOMPSON PRODUCTS, INC., CLEVELAND, O.

Also Manufacturers of Tappets, King Bolts, Tie-Rod Bolts, Spring Bolts, Bushings, and Starting Cranks

Thompson Silcrome Valves



Key Graphite Paste expands with heat



Try This Test—

TEST No. 1. Place a small quantity of Key Graphite Paste on the bit of a screw-driver. Hold a match under it and see it EXPAND.

This is the quality that is valuable where you must have a tight joint—such as when sealing a cylinder head.

That's Why Key Graphite Paste Makes Joints 100% TIGHT!

—at any pressure—at any heat—KEY will hold—will expand to meet the condition.

This is but one of its many qualities which we will illustrate in these pages every other week.

It is used to excellent advantage on all screw threads; on battery terminals to stop sulphation and prevent corrosion; on spark plug threads; on rusted tire rims; on felt washers; on spring leaves; on manifold; on shrieking brakes; etc., etc.

A big selling staple for Jobber and Dealer!

KEY BOILER EQUIPMENT CO.
27th & McCasland Ave., East St. Louis, Ill.



SAMPLE CAN FREE

Key Boiler Equipment Co.
27th and McCasland Ave.
East St. Louis, Ill.

Please send me, without charge or obligation a sample can of Key Graphite Paste.

(name)

(business)

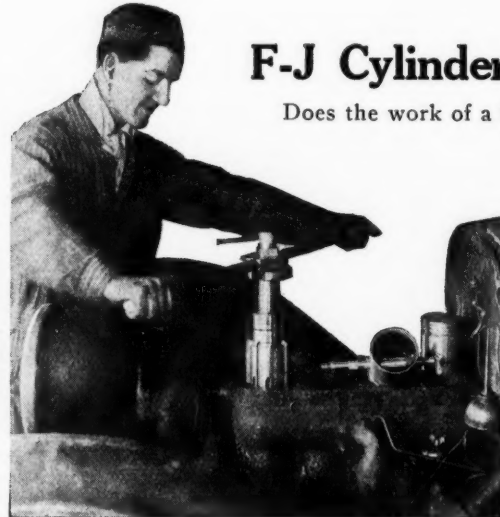
(address)

(jobber's name)

MA 12-4-24

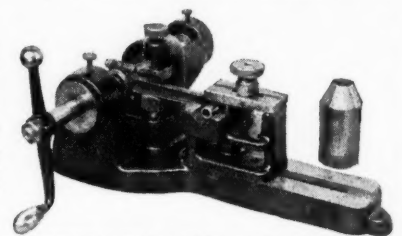
F-J Cylinder Reamer

Does the work of a \$3,000 machine

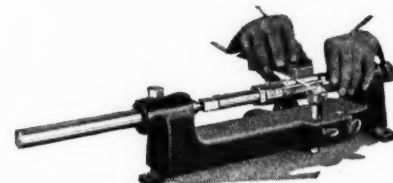


Pin Your Faith to the Foster-Johnson Family of Re-Conditioning Tools

and you will give service which makes and keeps satisfied customers. F-J equipment is the foundation of many a money-making service station. Write for literature and ask for the F-J Station Manual — shows how to get bigger business at bigger profits.



CONNECTING ROD RE-BORING
FIXTURE



REAMER SHARPENER
For Servicing Reamers in the Shop.

F-J Cylinder Reamer

F-J Cylinder Hone

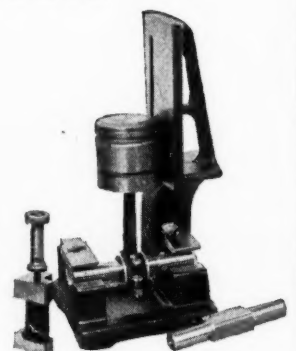
F-J Reamer Sharpener

F-J Connecting Rod Re-
Boring Fixture

F-J Piston Aligner

F-J Connecting Rod
Straightening Vise

Kylin General Purpose
Reamers.



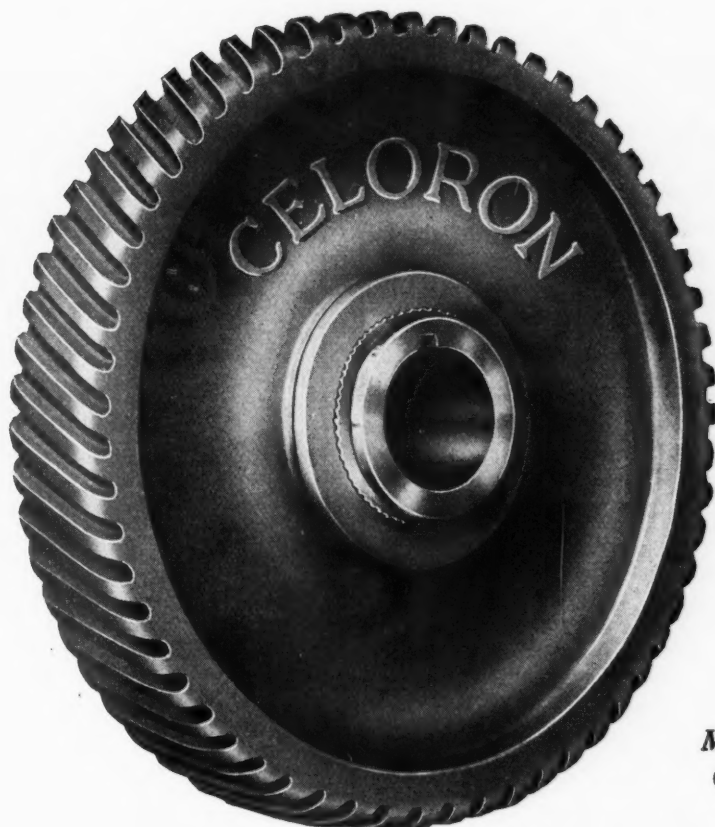
PISTON ALIGNER
A Precision Tool

FOSTER-JOHNSON REAMER CO.

1318 Beardsley Ave.

ELKHART

INDIANA



*More than a million cars have
Celoron Silent Timing Gears*

Car-makers call *this* the standard silent timing gear

MORE and more cars are being made with permanently silent front ends. They are equipped with modern, noiseless timing gears.

Celoron is the standard timing gear material. Celoron, the fabric gear material, proved to car manufacturers that timing gears could be silent and effective. It is

tough, resilient, non-absorbent. It does not warp or swell. It reduces wear and tear on metal gears and bearings, lessens vibration, cushions shocks.

Get genuine Celoron Silent Timing Gears. Jobbers and dealers all over the country carry stocks of these gears. Look for the "Celoron" mark.

Wherever chimneys smoke and wheels turn there are countless electrical and mechanical uses for Celoron and Diamond Fibre.

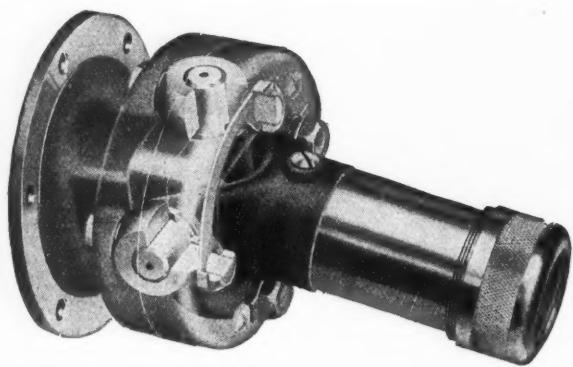
Diamond State Fibre Company

Bridgeport, Pa., and Chicago, Ill.

The oldest and largest manufacturer of vulcanized hard fibre and laminated bakelite materials in the world.

CELORON

SILENT GEARS



Building Up the Service Department

Successful Service Stations no longer attempt to repair badly worn or unsatisfactory parts.

They have found that the smart thing to do is to replace with a high grade part.

"MECHANICS" Oil Lubricated Universal Joint

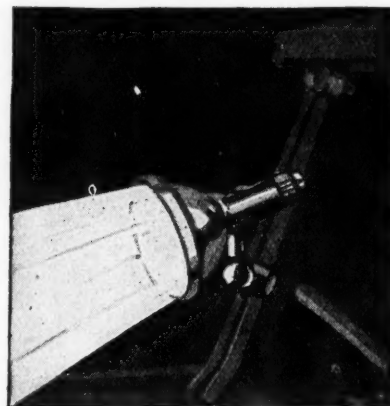
When you get a difficult or unsatisfactory Universal to work on there is but one best thing to do—install a "MECHANICS."

This Universal comes to you completely assembled. To install it, it is only necessary to cut the shaft to the required length.

And then you can assure your customer that if he will re-fill it with oil but once or twice a season he will be done with all Universal Joint trouble as long as he owns the car.

Wire or write for full information and prices. This is the time to do it.

MECHANICS MACHINE CO.
Rockford Illinois, U. S. A.



200 Yds. of Daylight



Drive anywhere at night and the first accessory that you will feel the need of is a spot light. Every motorist wants a penetrating, easy-to-control shaft of light to guide him at night—to light his way when backing up—to light his work when the hood is up.

The Victor No. 100 will "spot" the open spaces in front of the driver as easy as putting your finger on a picture. What's more—it stays put. The Victor Spot Lamp stays focused and will not jar out of position. Yet it responds readily to a touch without fussing with set screws or clamps.

This lamp is an example of Victor fine quality throughout. It is built up with a double shell entirely of brass to prevent rust and to protect the reflector from ordinary dents.



No. 47 "Firefly"

An attractive, beautifully finished parking lamp. A one-piece casting fitted bright imported jewels. An efficient little companion to the spot lamp.

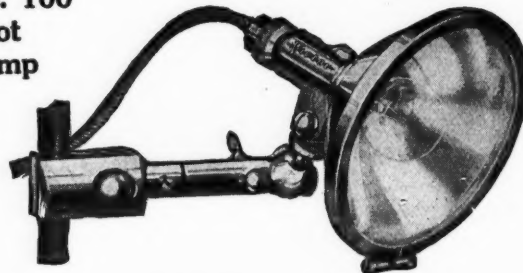
It is finished in black enamel, all nickel or black and nickel. It is furnished complete with cable and adjustable bracket and a self-contained on-and-off switch. Ready to install on any windshield. For closed cars specify No. 103.

Write for catalog on this and other lamps in the Victor Line.

The Cincinnati Victor Company

714 Reading Road, Cincinnati, O.

**Victor
No. 100
Spot
Lamp**



The Victor Line

Coming!

The 25th Annual Show Issue and Specification Number of **MOTOR AGE** January 22, 1925

A full and comprehensive description of everything new that appears at both of the big Silver Jubilee Shows will be given in this and other January issues of MOTOR AGE.

All the News!

All the Facts!

And in addition the greatest body of trade ideas and current statistics ever put together in one issue of MOTOR AGE. We are entering on a year that will make history—the jubilee year of the industry—and MOTOR AGE will start you off right with the very information you need to make it a banner year for you.

Here are a few of the features:

?

What solution will 1925 offer for the used car problem?
Is the open car due to disappear?
Are pyroxylin body finishes a success?
Are the fuel dopes here to stay?
Has the last word been said in brakes?
Are any more factories planning eights?
Is a new transmission coming?
You can get the answers to these questions by reading MOTOR AGE.

YOUR ANNUAL REFERENCE GUIDE

Comprehensive Specifications tables of all cars and trucks on the market. Always in demand months after our supply of the issue is exhausted.

Serial Numbers and dates of manufacture for all cars now on the market. With this information, you can quickly tell the age of any car.

Weights and Prices of all cars on the market. Information that you must have if you sell cars.

FLAT RATES

A fad or a fact? An experiment or an accomplishment? What do the factories think of it? What are they planning to do about it? What will the final development of flat rate be? MOTOR AGE has the answers to a lot of the questions, and will print them in the Annual Show Issue and Specifications Number of January 22, 1925.

All this and 51 other numbers for only \$3.00!

Subscribe now and be sure of getting your copy!

MOTOR AGE

5 S. Wabash Ave.,
Chicago, Ill.

Gentlemen: Enclosed find \$3.00 to pay for a year's subscription to MOTOR AGE, including all special issues published during the life of my subscription.

Name

Street and No.

City State

Firm Name

NOTE— If you are already subscribing to MOTOR AGE, please hand this coupon to a dealer who is not. He'll become a better competitor from reading MOTOR AGE.

IMPORTANT MOTOR AGE is published exclusively for the trade. Subscriptions are accepted only from those actively engaged in our field—so please don't forget to include your business card or letter head with this order.

NORTH EAST

Electric Starting Lighting Ignition Motors Service Stations



No matter
how many

starts and stops have to be made in the day's work, North East Equipment can be depended upon to respond day in and day out. This is one of the big reasons why North East Starting, Lighting, and Ignition Equipment is now in use on more than a million automotive vehicles.

And when the time comes that new parts are needed, Authorized North East Service Stations and Genuine Parts Dealers are to be found wherever North East Equipment is in use.

NORTH EAST ELECTRIC CO.

ROCHESTER N.Y., U.S.A.



Manufacturers of Automotive Equipment for

Dodge Brothers	Reo
Yellow Coach	Yellow Cab
Leon Bollee	Fifth Ave. Coach
Holt Tractor	Berliet
Mack	Fay & Bowen
Delage	F. W. D.
White	Yellow Sleeve Valve Eng.
	Sterling Marine Engine



Official North East Service Organization
NORTH EAST SERVICE INC.

Rochester	London	New York
Atlanta	Paris	Kansas City
Chicago		San Francisco
Detroit		Toronto

SERVICE STATIONS IN CITIES OF IMPORTANCE
THROUGHOUT THE WORLD.

Directory of Service Stations Furnished
on Request.



USE ONLY *Genuine* SERVICE PARTS



Be thankful
for **EZY-OUT**

When a screw breaks off—any sort of a screw—away down deep in a hole where it'd be almost impossible to get it out except by blasting—be thankful for the EZY-OUT SCREW EXTRACTOR.

When you have EZY-OUTS, you don't have to bother with files, punches, cold chisels and profanity—

Just reach over to the bench, get your EZY-OUTS, and the whole job's finished long before you could get started the old way.

EZY-OUT SCREW EXTRACTORS are, today, an essential part of the shop equipment of every well-organized repair shop. Good managers, almost everywhere, realize that EZY-OUT is an insurance policy—and they never can tell just when they may have to cash in on it.

How to Remove a Broken Screw With "EZY-OUT"

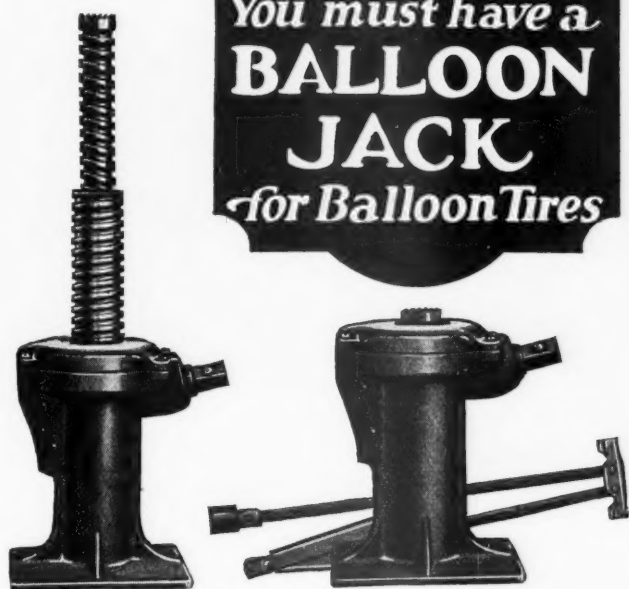
Drill a small hole in the broken end of the screw—just big enough to enable you to insert the business end of the EZY-OUT EXTRACTOR. Insert EZY-OUT, slap on a tap wrench, give it a strong left-hand twist—and the screw will "back out" ON

ITS OWN THREADS! No damage whatever to the threads of the hole—therefore, no re-tapping to do. EZY-OUT does the whole job in from two to ten minutes, as against half an hour to an hour and a half the old way.

EZY-OUT is packed in five handy sets to meet every need, including YOURS. Your local dealer will show you the set you want. If he doesn't stock them, then please write US.

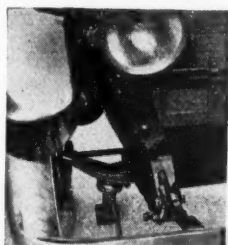
The **CLEVELAND** TWIST DRILL COMPANY
CLEVELAND
NEW YORK-CHICAGO-LONDON

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

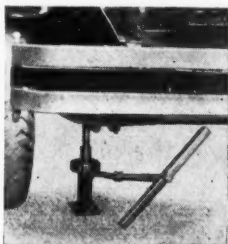


You must have a
**BALLOON
JACK**
for Balloon Tires

*Here is the one Balloon Jack
for you to sell—*



Reliable No. 7 under axle.
32 x 6/20" balloon tire flat.



Axle partly raised tire just
clearing ground.



32 x 6/20" tire raised 3 in.
clear of ground.

Sooner or later you will sell a balloon jack to every one of your customers who are using balloon tires!

It doesn't take long for a motorist to find out that an ordinary jack won't work with balloon tires. One puncture teaches that lesson. Then he wants a real balloon jack—and wants it badly!

Here is the balloon tire jack which will take care of all your balloon tire customers. It's the Reliable No. 7. Starts to lift at 6 3/4 inches and will raise an axle 10 inches. That's clearance and lift enough for any balloon tire made.

Why not sell this jack? It means that you have to stock only one number for the needs of all your customers who have balloon-tired cars. That means a rapid turnover.

Both screws in this new jack work at the same time—one inside the other. Easier and faster to operate than a ball-bearing jack. 4,000-lb. capacity. 36-inch folding handle. Red baked enamel finish.

*Send in your order now.
Your jobber will supply you.*

ELITE MANUFACTURING CO.
Dept MA-13 Ashland, Ohio

NORTHWESTERN BRANCH
G. A. ASHTON CO., St. Paul, Minn.
(Complete stock carried in Ashton Bldg.)

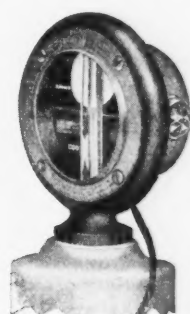
SOUTHWESTERN BRANCH
THE CARROLL CO., Dallas, Tex.
(Complete stock carried in Carroll warehouse)

SALES REPRESENTATIVES
MOTOR PRODUCTS CO.,
149 Church St., New York City, N. Y.
THE L. E. SPENCER CO.,
704 Stahlman Bldg., Nashville, Tenn.
A. E. MOHRIG,
1450 Pine St., San Francisco, Calif.

No. 7 RELIABLE BALLOON TIRE JACK



Driver's View



Front View

Motometer Type—Retails for \$3.00

Sell the New “TELTAILITE”

Is the stop light working? Yes—if the “Teltailite” flashes back its yellow signal. No—if it doesn't. Car owners want this positive protection against rear end collisions. They buy it readily. A fine opportunity for sales and profits.

The “Teltailite” is easily connected to any stop light circuit. Quickly installed on the dash or screwed into the radiator cap or on the back of the Motometer. Finished in nickel and with red and green courtesy lights it ornaments the finest car.

Providing long-needed protection, well and beautifully made, priced to sell fast at a good margin, the “Teltailite” will certainly be a big seller for you.

Retail Prices—

Motometer Type	\$3.00
Lantern Type for Radiator	
Cap	3.50
Dash Type	1.25

Order a trial assortment from your jobber.
Write for detailed description to

The Imperial Brass Mfg. Co.
1217 W. Harrison St. Chicago, Ill.



Lantern Type.



Dash Type

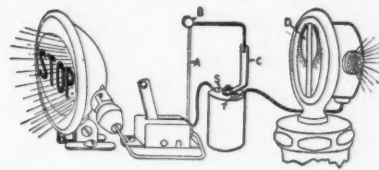


Diagram shows Motometer Type hookup
with stop light circuit.



The Safeguard!

—of Your Reputation
and Your Customers'
Interests

BASCO Generator Cutout. Its proven dependability—its unflinching performance—is your assurance that no replacement job in which you use a BASCO Cutout, will reflect discredit on your reputation.

Extra heavy wire in series winding protects against over-load burn-outs; a high resistance shunt assures accurate and positive adjustment; completely riveted assembly and specially tempered steel spring make alignment and adjustment permanent; large pure silver contacts protect against burning points, a detachable mounting bracket makes for easy installation on flat surface or round generators.

No. 1655—6 volt, 15 amp., \$2.00 list

No. 1441—12 volt, 15 amp., \$2.55 list

Order from your nearest BASCO distributor.

BRIGGS & STRATTON CORP.

MILWAUKEE



WISCONSIN

Also Builders of BASCO Switches and Horns.



Generator Cutout

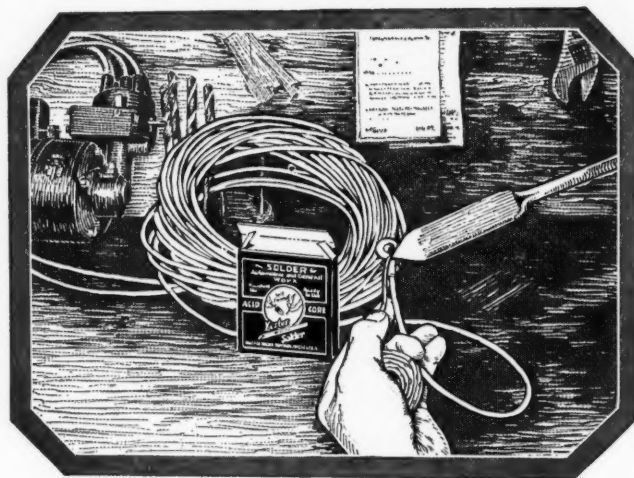
KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



For This Important Work

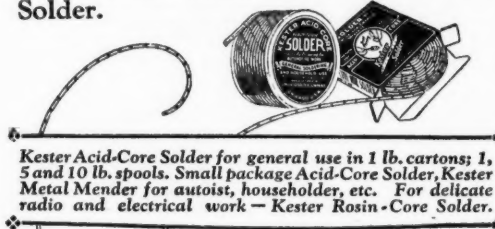
YOU know how important good ignition contacts are to the efficient operation of a motor.

Carelessly twisted wires around the binding post waste "juice." Terminals soldered to ignition wires assure a hotter spark because these contacts mean little or no leakage of current.

Use Kester Solder not only to save "juice," but also because Kester saves time, labor and material over the old way of soldering.

Kester Solder requires only heat, because inside this hollow wire solder are tiny pockets full of flux. As the solder melts, the correct amount of flux flows to the job, right where it is wanted.

Start saving today by using Kester Solder.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the

CHICAGO SOLDER COMPANY

4203 Wrightwood Ave.

CHICAGO, U. S. A.

CURTIS Air and Water STAND



Made either column or low type, free from all complicated parts, automatic valves and the like which quickly get out of order. Present many exclusive features.

The Recognized Standard of Excellence

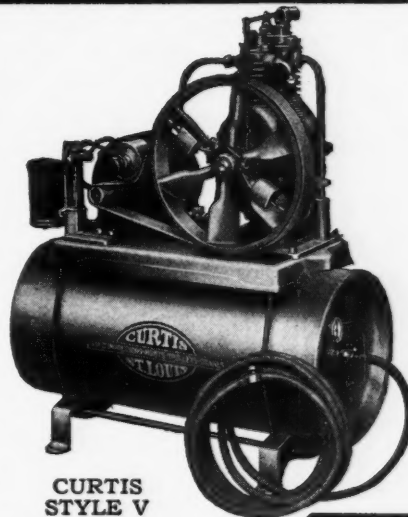
WHEN you buy a Curtis Compressor Outfit or Air Stand you get advanced design and over-all mechanical efficiency—a result of 28 years' experience in building air compressors. You get a product of an institution now in its 71st successful year and are assured of the integrity and stability naturally associated with a business history of nearly three-quarters of a century. As a result you get a quality product plus the assurance that that product is not likely to become an "orphan."

Among the many outstanding features of the Curtis Automatic Compressor, is the

CURTIS Centrifugal Unloader

Positive in action under all conditions. If the motor slows down or stops for any reason whatever, the Curtis centrifugal unloader unfailingly unloads the compressor so that when it starts again it will not start against air pressure. No jumping or burning of belts or burnt out motors.

CURTIS PNEUMATIC MACHINERY CO.
1527 Kienlen Ave. . . . St. Louis, U. S. A.
Branch Office: 530-H Hudson Terminal, New York City



CURTIS
STYLE V
Two-stage Outfit,
Sizes 3-4 to 2 H. P.
Automatic Starter.

CURTIS
PNEUMATIC
MACHINERY CO.
1527 Kienlen Ave.,
ST. LOUIS, MO.

Gentlemen: Please send me full details on Curtis Air Compressors and Air Stands, your proposition and prices.

Name.....

Address.....

Jobber's Name.....

Address.....

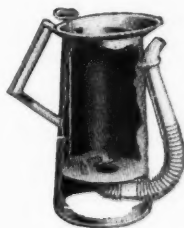
CURTIS

1854 ^{71st} ANNIVERSARY 1925

Don't Spill Alcohol On Radiators

Brookins Liquid Measures are just the thing for filling radiators with denatured alcohol. The flexible metal hose can be inserted in the radiator, so that no alcohol slops over and spoils the finish on the hood. The thumb release gives positive control on the amount of alcohol that goes into the radiator, so that none is wasted.

Hold the Confidence of Your Customers



When a customer asks for Medium oil, don't pick up a container previously filled, and empty it into his crankcase. He can't be sure that he's getting what he asks for—and no customer likes that.

Draw the oil from a tank that is marked "Medium." Let him see it flow into an open Brookins Measure. Then—without bothering about a funnel—carry it to his car, insert the Brookins flexible, metal nozzle in the oil port, and press the thumb valve. That's all.

You won't spill or waste a drop. You only make one trip for a quart or a gallon. You'll give him quicker service. And he'll know that he's getting what he asks for.

Made in copper finish in one, two, four and five quart sizes.

Practically all jobbers carry Brookins Oil Measures in stock. If your jobber doesn't, write us for samples and prices. Write for descriptive matter on Brookins Emergency Gas Can and Brookins Instant Price Charts for Gasoline Pumps.

THE BROOKINS MFG. CO.
342 Xenia Ave. Dayton, Ohio.

Brookins
SERVICE STATION EQUIPMENT

Other Brookins Products

Brookins Price Charts for service stations cost \$7.50 for a complete set. They pay for themselves many times over.

Brookins Emergency Gas Can helps to give the kind of service that every car owner expects.

Write for descriptive circular

Old Timers Know 'em by the Feel



Others know them by the trade-mark

WHITING-ADAMS

The sure way to pick out a good brush is to look for this name branded in the handle. It has stood as a guarantee of fine brush-making for over 116 years, and painters who have grown gray in the craft learned the name when they learned their trade.

JOHN L. WHITING-J. J. ADAMS CO.
BOSTON, U. S. A.
Brush Manufacturers for Over 116 Years and the Largest in the World

**WHITING-ADAMS
BRUSHES**

A
P
E
X



JOBBER'S Catalog APEX in 1925

There's a whale of a national demand waiting for you on this fast-moving replacement part guaranteed to stop oil pumping and piston slap and to increase power, pick-up and performance without reboring cylinders.

One jobber turned a 25 gross stock 24 times this year. Another sold \$22,500.00 worth so far in 1924. Get your share.

DEALERS: Write for descriptive literature, discounts and what hundreds of our dealers have done with Genuine Apex Innerings.

THOMSON MFG. CO.

Dept. C. Peoria, Ill.

"If it isn't an APEX—it isn't an INNERING"

LIST, 20c EA.—ATTRACTIVE DISCOUNTS



Go After Big Game With A Good Gun

The service garage is about to be known for its "RECONDITIONING" ability as well as for its repair work.

Car owners are going to hold onto their cars for their maximum mileage. Help them get their full 100,000 miles. There's a fortune in it for you.

Such tools as THOR ELECTRIC DRILLS—that will stand up under every condition—are a good place to start toward getting this business.

From your dealer or direct.
Send for New Catalog 14.

Independent Pneumatic Tool Co.
600 W. Jackson Blvd. Chicago, Ill. 1463 Broadway New York City

Branch Offices Everywhere

64
SIZES
and
STYLES
0 to
2"

Thor

UNIVERSAL
ELECTRIC
DRILLS

YOU CAN'T AFFORD TO WAIT

Order **TODAY** your K-D Lamps in Holiday Wrappings
Special arrangements to handle this huge holiday demand enable us to ship **IMMEDIATELY** in time for your Xmas trade.

THE K-D LAMP CO.

Cincinnati, Ohio

Drum Type Spot Lamp

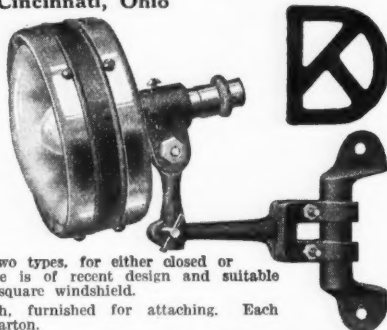
Specially designed, Drum Type, to harmonize with latest type Head Lamps.

Made in two finishes. ALL NICKEL or BLACK AND NICKEL.

Lamp is double shell construction, made entirely from BRASS, including bracket, therefore will not rust or corrode.

The bracket is made in two types, for either closed or open car, the open car type is of recent design and suitable for use on either round or square windshield.

Cord, four feet in length, furnished for attaching. Each lamp packed in individual carton.



All K-D Lamps in Holly Packages for Xmas Selling—Order Now

K-D Driving Lamp

A drum type lamp, with special bracket, can be attached to frame of car, on fender, cross rods or cowl of car, and can be so wired that when Head Lamps are dimmed, this will light. Light can be thrown to side of road so that an approaching car may be passed in safety.

Construction is double shell type, outer body is drawn in one piece from suitable gauge metal, all plated parts made from brass, highly polished and finished.

Reflector is parabola shaped, made from brass, highly polished and plated.

Bulbs are 6-8 volt, 21 c. p., type "C", either double or single wiring system.

Finished in black and nickel only.



MORRISON AUTOMATIC DOUBLE RANGE Worm Drive JACKS



Made in 9 sizes for all service requirements.
Special model for Balloon Tires.

Can't slip or tilt

The flexible steel "Sure Hold" cap prevents dangerous slipping. The long folding handle (36" to 72") operates from standing position.

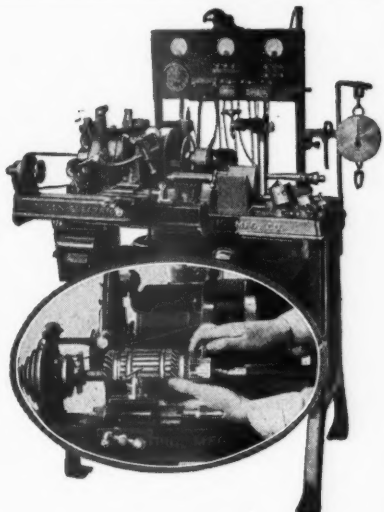
High class construction throughout. Vanadium steel gears and standard make bearings.

Write for sample for test.

Woods Engineering Co.
Alliance, Ohio

This Jack has been furnished as standard equipment on high class passenger cars, trucks, buses and fire engines for the past 4 years.

Larger Profits in Less Time



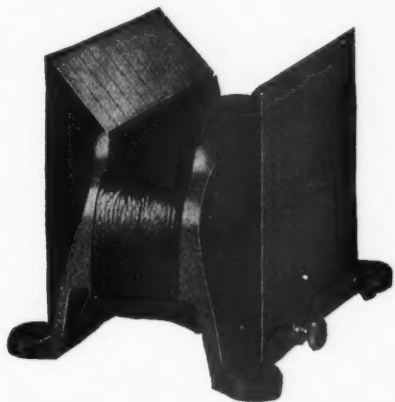
Both ignition and generator tests can be made at the same time on the Allen Universal Test Stand—two separate circuits and meters being used. This is only one of the many distinctive features of the "Allen" that makes it the most valuable machine for progressive garages. Such time saving conveniences speed up tests and pay you a profit from the hard jobs other service stations cannot handle. Ask your jobber, or write us for complete details and literature.

Allen Electric Manufacturing Co.

2051 Lafayette Blvd.

DETROIT

MICHIGAN



This Growler Costs But \$6.50

With it you can tell in ten seconds whether an armature is in good condition. If it is not, you are saved all the grief of having to do the whole job over, losing all your profit and the customers' goodwill besides. Operates on 110 Volt A. C. Current.

Sold direct or through your jobber. Your check for above amounts plus twenty-five cents postage brings this moneymaker to you.

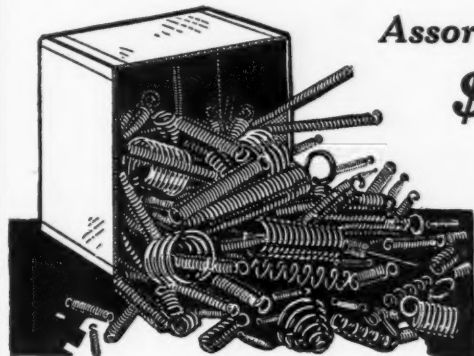
ARMATURES: We rewind any and all kinds of GENERATOR, MOTOR and MAGNETO armatures, and reship same day old armatures received.

FORD GENERATOR AND MOTOR ARMATURES.....	\$ 1.50
ALL SMALL DOUBLE UNIT GENERATOR AND MOTOR ARMATURES.....	5.00
SINGLE UNIT MOTOR GENERATOR ARMATURES.....	10.00
MAGNETO ARMATURES	\$3.75 to \$4.75

Armature Rewinding Co., Inc.

3301 Washington Blvd., St. Louis, Mo. (1)

Coil Springs for any job at "profit" prices

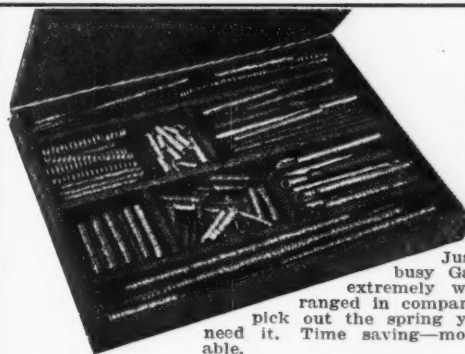


Assortment 1
\$1.50

Over 100 steel and brass extension and compression springs in each box. Fill practically any emergency. All fine quality.

A very handy box for the busy Garage and Service Station.

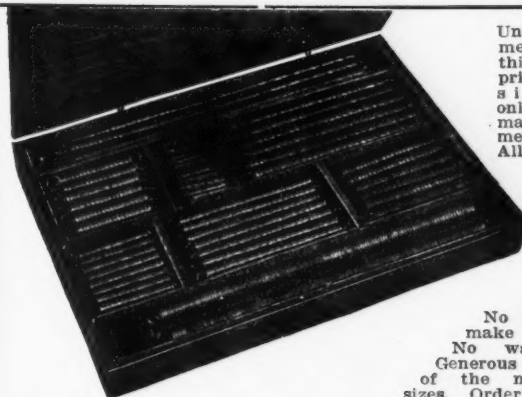
Assortment 2—\$3.50



This Peck Assortment of fine quality coil springs contains about everything needed in the spring line.

Just the thing for the busy Garage. The box is extremely well made and arranged in compartments so you can pick out the spring you need when you need it. Time saving—money saving—profitable.

Assortment 2A—\$5.00

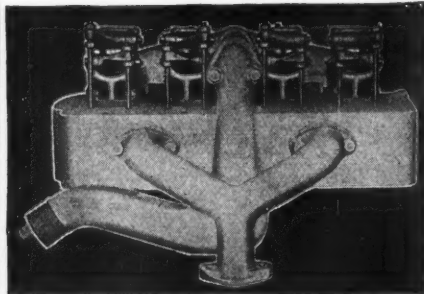


Unlike Assortment No. 2 this box comprises extension springs only, which many service men prefer. All springs made from best quality Black Tempered Wire.

No stopping to make up springs. No wasted time. Generous quantities of the most needed sizes. Orderly arranged. Finest quality. Always ready right at your finger tips. Whatever your needs—Peck can fill them. Mention your jobber for trade discount. Order your box today—choose what you need and send in your order.

The Peck Spring Co., Plainville, Conn.

ROOF 16 OVERHEAD VALVE EQUIPMENT For Ford and Dodge Motors ROOF 8 VALVE HEAD FOR FORD MOTOR



Stupendous Power— Lightning Speed

Ford racing cars with Roof Equipment are rivals on mile and one half mile tracks of the highest priced racing cars. Doubles the pulling power of the Ford or Dodge pleasure car or truck. Hill climbing and general road work beyond wildest dreams of the owner. Complete—ready for installation—no machine work necessary. We are headquarters for all speed equipment. No matter what you want, write us. Racing quality—lowest prices. A postal card brings you complete list of our specialties.

Jobbers—Dealers—Consumers—Write Us.

THE LAUREL MOTORS CORPORATION, ANDERSON, INDIANA

SKIVED PATCHES

Cord and Fabric

Any Size or Ply—Made from Factory
Adjustment Tires.

THE LEO MEYER CO.
AKRON, OHIO

Est. 1914

TIRES

TUBES

ACCESSORIES

SHERER ACCESSORY DISPLAY CASE

It gives 50 per cent more and better display than any ordinary show case and in addition gives drawer or shelf storage behind the display section.

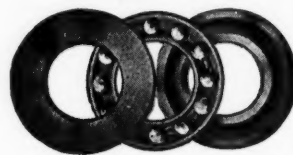
Built in four sizes from five feet to fifteen feet five inches in length.

Sold on a payment plan so liberal that you will be convinced that the case will actually pay its own way through profits on increased sales. For complete information write us on your business letterhead today.

SHERER-GILLET COMPANY

1701-1709 So. Clark St.

Chicago, Ill.



STAR BALL RETAINERS for Thrust, Mag-
neto and Cup and Cone Types of Bearings—

The Bearings Company of America
Lancaster, Penna.

Western Sales Office,
1012 Ford Bldg., Detroit, Mich.

BIG SELLER

An article that is an absolute necessity to every battery owner surely has a big field. Nearly 15 million batteries in service. NON-KOROD is an enemy of corrosion and sulphation. Preventing these leaks and battery deterioration makes NON-KOROD very valuable. Car owners will appreciate it at the small price per can.

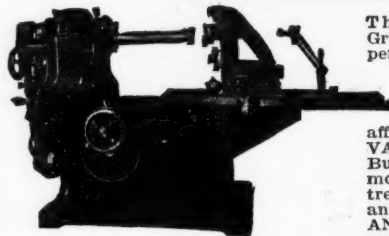
Jobbers and Dealers write for literature and selling plan

**NATIONAL CABLE
COMPOUND CO., Inc.**
MITCHELL, INDIANA



Non-Korod
GUARDS
BATTERY LIFE

LANDIS



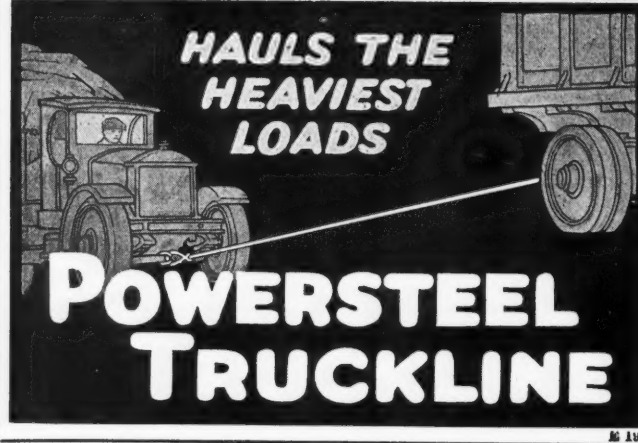
The LANDIS Cylinder Grinding Machine is the perfected product of the world's largest exclusive grinder builders. Because of our volume we can afford to give you MORE VALUE for your money. Built expressly for automotive repair shops. Extremely simple in design and operation. Don't buy ANY machine without first getting a LANDIS quotation. Catalog.

Landis Tool Co., Waynesboro, Pa.

New York Office—30 Church St.

**HAULS THE
HEAVIEST
LOADS**

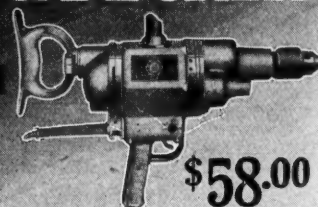
**POWERSTEEL
TRUCKLINE**



BLACK & DECKER

**SPECIAL
HALF-INCH
DRILL**

*With the Pistol Grip
and Trigger Switch*



\$58.00

THE BLACK & DECKER MFG. CO.
Towson, Md.



Don't Let the Black Hand Kill Your Trade!

Protect your customer's car upholstery and body from grease marks and tool marks.

Black hand marks peeve him and hurt you.

Mechanics can work better and faster with fenders, cowls, radiator, upholstery, etc., covered with KLEENKAR SHOP COVERS. Write for folder with samples of materials, etc.

Automotive Fabric Equipment Co.
703 Cass St. Milwaukee, Wis.



TRADE MARK



USE A STORM HONE

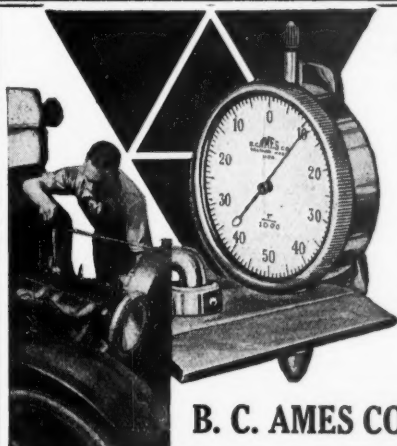
It handles an important part of your cylinder work. Takes all sizes of cylinders from 2 3/4 to 8". The deep, heavy, wide faced stones on the Storm Hone mean longer life, faster cutting and smoother finishing as well as freedom from chatter and stone breakage. Complete and with extra equipment only \$40.25.

Write for the Storm Book, "Modern Cylinder Methods"

STORM Mfg. Co.

406 A Sixth Ave. So. Minneapolis

Minn.



AMES Jr. CYLINDER GAUGE

With Setting Tool Handle

All the time saving facts in a glance at the dial

Price \$17.50

Buy from Your Jobber

B. C. AMES CO., Waltham, Mass.

FOLLETT'S NEW MODEL TIME STAMP

—accounts for every labor minute



Learn the interesting details from our descriptive data.

Prints the year, month, day, hour, minute, A. M. or P. M. at the exact moment the plunger is pressed—like this, for example:

NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic—except for winding. Every machine guaranteed.

Follett Time Recording Co., 217 High Street, Newark, N.J.
"Established Since 1904"

TRINDL

QUALITY PRODUCTS

Are Unexcelled In
QUALITY—
WORKMANSHIP—
ACCURACY—
DESIGN—
LONG LIFE—
MARKING—
PACKING—
PRICE—
and
GUARANTEE



For sale by jobbers everywhere. Write us for complete price list and name of jobber nearest you.

THE TRINDL CO.

2917 S. Wabash Ave.

Chicago, Ill.

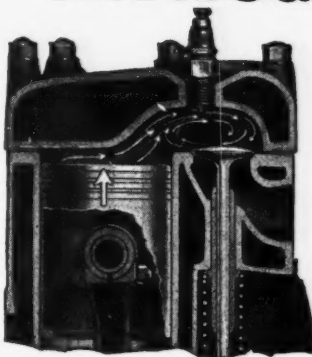


Immediate Shipment on Wire Replacement Spokes

Specify Mansfield Wire Spokes for replacement. New manufacturing process prevents strain on shank and thread. Non-crystallizing and pre-stretched. Immediate deliveries from large stock covering practically all wire spoke requirements.

The Mansfield Wire Spoke Co.
Mansfield, Ohio

The Ricardo Head

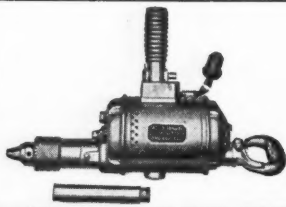


Abolishes Fuel Knock

No modern engine operating under practical conditions knocks when using ordinary fuels. This is the achievement of the Ricardo Head.

WAUKESHA

Motor Company
ENGINE BUILDERS
Waukesha, Wisconsin
New York, N. Y.



The Cincinnati

Electric Drills Grinders Buffers

A tool for every purpose. Long service makes them cost the least.

The Cincinnati Electrical Tool Co.
1515 Freeman Ave., Cincinnati, O.

Hycoc
Brake Lining
FOLDED AND STITCHED
HYDRAULIC COMPRESSED

Millions of feet annually installed as factory equipment

THE MANHATTAN RUBBER MFG. CO.
PASSAIC, N.J.



Real High Tension Ignition for Ford Cars

Varley coils eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.

Kokomo
LONG-LIFE
TIRES AND TUBES

Kokomo Long Life tires and tubes make money for dealers who handle them.

Kokomo Twin-Grip Fabrics
Kokomo Two-Grip Cords
Kokomo Everlast Red Tubes
Kokomo Standard Gray Tubes

KOKOMO RUBBER CO., Kokomo, Indiana
131 South Main St.

TAKE THE END-PLAY OUT!

—WITHOUT PULLING THE MOTOR



THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

Pat'd 7-22-'22

ADJUSTABLE BEARING CO., Inc.
Dept. M. Brazil, Indiana

ZENITH
CARBURETOR

More Power
Less Fuel

Zenith - Detroit Corporation, Detroit, Mich



The MINUTE METER \$2.50

A bargain in Dash Clock value. Neat, accurate, dust and vibration proof. Guaranteed. Made by clock makers of forty years' experience. Set and wind in a jiffy. Fits any dash, wood or metal. Fast seller. Display stand. Dealer helps. Radium Dial \$3.50. Canadian prices add \$1.00.

The LEX CLOCK MANUFACTURING CO., Inc.
Waterbury - Connecticut - U.S.A.

Pedrick
HEAT-SHAPED
PISTON RINGS

Heat shaped to insure perfect roundness, sold at almost the price of a snap ring.

Wilkening Mfg. Company
15th and Mt. Vernon St., Philadelphia, Pa.



PERFECT PERFORMANCE

The remarkable showing of the three Fronty-Fords in the 500 mile race was due solely to the Frontenac Cylinder Head. This head is adapted for use on YOUR Ford by its designer and builder, Arthur Chevrolet. Book, "How to Build a Fronty-Ford," \$2; free with orders of \$50 or more. Write for FREE catalog.

Frontenac
CYLINDER HEAD

CHEVROLET BROS. MFG. CO.
410 W. 10th St. INDIANAPOLIS, IND.

HIGH LUSTRE FINISH

For Everything Varnished or Enameled
Automobiles, Pianos, Furniture

H. L. FEASEL'S LABORATORY
9-11-13 Desbrosses St., New York, N. Y.



IT'S EASY TO SELL

"The only oil ring with a mileage guarantee"

"Sav-Oil" is stamped on bottom of every ring

The Sav-Oil Ring Mfg. Co.

1037 S. Figueroa St., Los Angeles

Standard Equipment on Practically 50%
of all Cars in America

HAYES WHEELS

Hayes Wheel Company, Manufacturers, Jackson, Mich.



BIG GAS SAVING

With the CYCLO "Dynamic" Hot-Spot
for Fords.

Automatic heat control keeps the "kick" in the mixture.

Price \$6.00

CYCLO MANIFOLD CO.

High & Chestnut, Akron, Ohio



ELGIN QUALITY

PISTON PINS

Regular, Oversize, Orphan
Shipped Same Day

ELGIN MACHINE WORKS

Elgin, Ill.



Bosch

Bosch Franchise details will be sent to any Distributor or Service Station on request.

ROBERT BOSCH MAGNETO CO., INC.
Otto Heins, Pres., 109 West 64th St., New York



"In Stock - Not Over a Day Away"

Write Milwaukee Die Casting Co., Milwaukee, Wis., for name of one of our 500 distributors nearest you.

MILWAUKEE BEARINGS

MALLORY IGNITION COIL



Patent Pend.

Special Feature for Winter Starting.

Increases Engine Power.

Guaranteed not to Burn Out.

DISTRIBUTORS: — There are thousands of Ignition Coils sold in your territory each year. You can build up a profitable and permanent business on the Mallory Coil, which is far superior to other coils. Write us to-day for our proposition.

THE K-M MFG. CO., TOLEDO, O., U. S. A.

"UNEK"

EASILY THE WINNER IN ITS CLASS

Here's Why

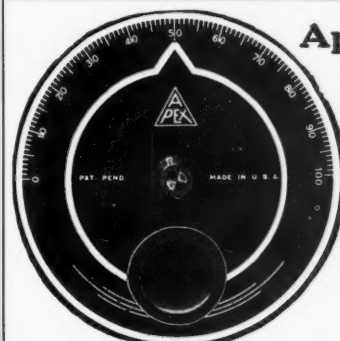


Hose Clamp

It outsells 'em all.
It is so easy to apply.
It is the most popular clamp.
The price is right.
And we haven't said a word about its superior qualities of material and manufacture.

Made and guaranteed by

OTIS-FLAGG CORP., York, Pa.



Apex Vernier Dial

Geared condensers requiring many holes in the panel and a careful lineup of pinion shafts are a waste of time and a bother. This marvelous instrument provides the fine adjustment for tuning in distant stations. The ratio is 10 to 1. It can be quickly applied to any shaft.

This Apex Vernier Dial is a product of the long and favorably known Apex Electric Manufacturing Company, who are producing it under the same exacting principles which have marked the great success of their Automotive products. Every accessory dealer should have a radio department. And no radio department is complete without the Apex Vernier Dial and other Apex Radio Products.

Automotive equipment dealers should write at once for complete information relative to this money-making item.

APEX ELECTRIC MFG. CO.,

1410 W. 59th St.,

Dept. 918

Chicago

Nationally Advertised!

Big plans for 1925. The Gemco line is a winner. Write today. GEMCO MFG. CO. 760 S. Pierce St. Milwaukee, Wis.

Send for catalog



**Gemco
BUMPERS**



*Thirty-seven
BRANCHES*

AHLBERG BEARING COMPANY
321 EAST TWENTY-NINTH STREET, CHICAGO, ILLINOIS



FORD FUSE BLOCK



No. 1 AG

UNION FUSES AND ACCESSORIES

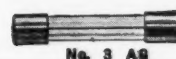
Fuses for every make of car. Fuse Block protects Ford lights and wiring. Also Fuse Boxes, special parts, stampings, etc.

Guaranteed satisfactory by oldest and largest manufacturers of electrical protecting devices. Write for catalog

CHICAGO FUSE MFG. CO.

Chicago

New York



No. 3 AG



UNION

New Departure Ball Bearings

Outsell because they Excel

The New Departure Mfg. Co., Bristol, Conn. - Detroit - Chicago

OVER 12 MILLION CARS AND TRUCKS REQUIRE SERVICE

Good wrenches—the right wrenches—are essential to good service.

This is where the Walden-Worcester design comes in—wrenches that fit the location as well as the nut.

WALDEN - WORCESTER

Incorporated

General Offices and Factory

475 Shrewsbury Street

Worcester, Mass., U. S. A.

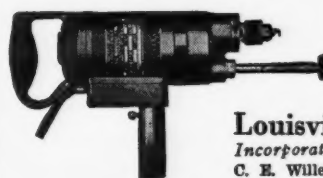


Get This "Pioneer" \$65 Garage Special

**Electric Drill
and Valve Grinder**

Greatest time and money saver, as well as money maker, for your shop—

"It Will Do The Work"



Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.


C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.

Yes! **Outperforms any car in its class**
GARDNER
 BUILT BY THE GARDNER MOTOR CO.—BUILDERS OF VEHICLES SINCE 1882


BIGGER PROFITS FOR YOU NOW WITH NEW 8 HOUR BATTERY CHARGING
 HB 8-Hour Constant Potential Battery Charging doubles your present income. Lowers charging cost, saves one-half on labor, one-half on rental batteries needed. Patented HB Voltage Regulator eliminates reversing. \$35 cash brings complete outfit. Your big monthly profits easily carry small payments. 30 days' free trial. Write for bulletin. Hobart Bros. Co. Box AR 22, Troy, Ohio.

THE LOWEST-PRICED COMPLETE OUTFIT ON THE MARKET

KISSEL *The Kissel Dealer does not meet competition. He makes others meet it.*
 CUSTOM BUILT
 KISSEL MOTOR CAR CO., Hartford, Wis.


 **Takes Off Wheel in a Jiffy**
C. & G. Wheel Puller
 Wonderful time saver for the busy shop. Screw Puller on hub, apply pressure and off comes wheel. No stripping of threads. No straining of wheel or brake drum. Guaranteed. Sold on money refund basis. Order through your jobber or direct. Puller \$12.00—Adapters \$2.00 each. State which cars you service.
 The C. & G. Wheel Puller Co., Inc., Wellsville, N. Y.

Let us send you our **FREE** Catalogue on
Huetter's
Fly-Wheel GearBands
 Huetter Machine & Tool Co.
 546 Kentucky Ave. Indianapolis, Ind.

 **The "Big Four"** A complete car washing service.
 RUBBER COVERED—IMPOSSIBLE TO INJURE CAR.
 Used in connection with our Little Giant Water Savers, or can be applied to any 1/2 in. or 3/4 in. valve.
 Rubber Nozzle—for full water flow.
 Spray Nozzle—for general purposes.
 Spout Nozzle—for cutting mud from fenders, etc.
 Slot Nozzle—a sheet of water covering a large surface with force.
 PRICE—Set of four Nozzles, \$2.00 less dealers discount
 The Gaylord Manufacturing Company
 Paterson, N. J.

JOHNSON Gas Appliances
 Metal-Melting Soldering Heat-Treating
JOHNSON GAS APPLIANCE CO.
 Cedar Rapids IOWA


BATTERY SERVICE EQUIPMENT!
UNITRON **PORTOSTAT**
Rectifier **Test Set**
 FOREST ELECTRIC COMPANY
 New and Wilsey Streets NEWARK, N. J.


 **REPLACEMENT PISTONS**
 ACCURATELY MACHINED
 Semi-steel—for use after a rebores or re-grind job. Made to manufacturer's specifications. Made to pass motor builder's inspection. Standard sizes and oversize. Write for price list.
 THE DALL MOTOR PARTS CO.,
 P. O. Station D, Cleveland, Ohio

\$200 *Retail* **Life Timer** *for Fords*
 Needs no oil. Short proof. Fool proof. Wipes a perfect contact regardless of wobble in the shaft. Bakelite Commutator is reversible, giving 2 timers for the price of one. Sold through the jobber. Write for folder and discounts.
Mechanical Production Co.
 MILWAUKEE, WIS., U. S. A.

NO TOOLS—It's Self-Closing
 Repair Link for Broken Cross Chains
 A Flower City Self-Closing Link attached with fingers to loose ends of broken chain closes and locks on first turn of wheel. Stops clanking—saves fender—low-priced. Box of 10 Links retails for 25 cents. Write for samples and discounts. Distributors wanted.
FLOWER CITY SPECIALTY CO. **Rochester, N. Y.**

Buick Continues Hall Endorsement
 After using Hall Hones for over one year Buick test out the New Hall Hone and approve of it. It is the only Hone endorsed by Buick.
THE HALL CYLINDER HONE CO.
 435 Dorr St., Toledo, Ohio



 **UNIVERSAL HOSE CLAMP**
 Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.
UNIVERSAL INDUSTRIAL CORP. **Hackensack, N. J.**

"Turn Miles Into Smiles"
 with **Stewart** **SHOCK ABSORBERS**
\$30 per set of four (\$1.00 increase in west)

 **Visible Night and Day**
SAFE-T-STAT
 ENGINE HEAT INDICATOR
 Always Accurate Theft-Proof
The Safe-T-Stat Co., Inc.
 Factory PHILADELPHIA General Offices
 57th and Westminster Ave. Drexel Building

Stevens **SPEED UP** **Tools**
 OVER 100 ACCURATE SHORT-CUTS TO GOOD WILL AND PROFIT ~ ~
 Ask for Shop Catalog "Thru your jobber - his service is economy"
STEVENS & COMPANY
 375 BROADWAY - NEW YORK

THE "Universal" Model (left) and the "Junior" Model (right) are the two automatic windshield cleaners you can depend upon for steady sales with no "come-backs."

The Folberth Auto Specialty Co.
Cleveland, Ohio

FOLBERTH
Automatic
WINDSHIELD CLEANER

\$7 \$5

Have you seen the new Gilmer Fan Belt?

It's a V shaped belt, constructed of tough fabric and a new special rubber compound. Sizes for all popular cars using V or grooved pulleys. Write for prices and complete information.

L. H. Gilmer Co.
Philadelphia

"It's a Gilmer Product—you can depend on it."—Happy Van, the Gilmer man.

Gilmer

THE QUINCY SILENT AIR-MASTER

The Most Air Per Dollar Cost

WALL PUMP & COMPRESSOR CO.

Quincy, Ill., U. S. A.

Cold-Drawn Sockets

ALLEN Wrench Sets

ALLEN PROCESS MAKING A SOCKET

The Allen Manufacturing Company, Hartford, Conn.

They work

WATSON STABILATORS

JOHN WARREN WATSON CO.
Phila.: 24th & Locust Streets
Detroit: 51-53 Canfield Ave., E.

3,000 Dealers Make Bigger Profits*

It will pay you to investigate

COLE BATTERIES **GUARANTEED 18 MONTHS**

COLE BATTERY SALES CORP. 2435-39 Indiana Ave. CHICAGO, ILL.

Over 110,000,000

TIMKEN
Tapered
ROLLER BEARINGS

Have Been Manufactured

Send U. S. Your Armature Repair Work

FORD ARMATURES REWOUND \$2.00

MOST ANY TWO UNIT GENERATOR ARMATURE \$5.00

ALL WORK GUARANTEED—WRITE FOR PRICE LIST
U. S. AUTO SUPPLY CO., 3845-49 S. WABASH AVE., CHICAGO

Spring-steel, Oil-tempered Bumpers in Six Complete Styles. Guaranteed Satisfactory Attaching Arms for all Leading Makes of Cars.

We invite comparison in appearance, quality and price.

THE BELLEVUE MANUFACTURING CO., Bellevue, Ohio

Goodrich Cable
AUTOMOTIVE EQUIPMENT
Starting-Lighting-Ignition
Formerly M.R.

Goodrich Cable is sold in lengths found to be the most popular with the average buyer—coils of 100 ft. packed in individual cartons. Both shop men and car owners like the clean 100 ft. package idea—and this leads to quick and profitable sales. Send for samples, prices and discounts.

THE GOODRICH-LENHART MFG. CO., Hamburg, Pa.

NO-LEAK-O PISTON RINGS

Won't Leak Because They're Sealed With OIL. No-Leak-O Piston Rings are making money for dealers everywhere. Their "oilSEALING" groove—found only in No-Leak-O—packs an oil film in between piston and cylinder walls like "packing" in a pump. Oil and gas stay where they belong. National advertising is helping the dealer sell No-Leak-O. It will pay you to stock No-Leak-O at once. Price 35c and up

Service Division—Oil Ring Department 376
THE PISTON RING COMPANY, MUSKEGON, MICH.

E-Z SPRING

FOR FORD CARS

Makes riding and driving a pleasure. Eliminates road shocks and hard steering, spring breakage, shock absorbers. Write for our money making dealer proposition.

W. D. LOWE & CO. 204 Mound St., Columbus, Ohio

Now offering both the matchless Peerless Eight and the Superb Peerless Six

PEERLESS

WEAVER GARAGE AND SHOP EQUIPMENT

WEAVER MANUFACTURING COMPANY
SPRINGFIELD ILLINOIS U.S.A.
Send for Catalog

Lorentzen Headlight Control

AN AUTOMOTIVE NECESSITY THAT SELLS

LORENTZEN HEADLIGHT CONTROL, INC.
60 Grand St. New York City.

The Cooper CUT-OUT

ENGINE TESTER AND CARBON OUTLET VALVE

Nationally advertised. Universally demanded. Order from Your Jobber.

Tasco Tells Gas Supply Instantly

Visible gas gauge for Fords. Insert in place of regular gas cap. Lift the seat cushion—there's the gauge. Quick, accurate, unfailing. Every Ford owner. \$1.25. Order from Jobber or direct. Liberal discount.

Send for distributors' proposition
The Akron-Selle Co., Akron, Ohio



Stops Pump Shaft Leaks Immediately and Permanently

Conneaut Plastic Metallic Packing molds in fingers. Fits in stuffing box. Forms a practically frictionless bearing. "Take it up" like a bearing. \$1.65 in one pound cans. Remarkable results. Your jobber has it or write direct.

Conneaut Packing Co., Conneaut, Ohio



QUALITY—PROFIT—TURNOVER

**American
Hammered
Piston Rings**

American Hammered Piston Ring Company
Baltimore, Maryland

Dealers
Every
Where

INSIST UPON

JB
The Original

Over a
Million
In Use

SILENT TIMING GEARS

MADE OF
CELORON

Dalton & Balch, Inc.

2333 Michigan Ave., Chicago



Carbon Removing Brush

The quick, easy way to remove all carbon deposits, B66, heavy wire for rough surfaces; B67, fine wire for machined surfaces and aluminum pistons. Used with small electric drill or Sioux Flexible Shaft.

Ask Your Jobber

ALBERTSON & CO.

SIoux CITY, IOWA

Pulls Car Over Rough Spots

KILSHOK
"In Offroad"



No friction—no springs—
no oiling. For Fords—solid Drop
Forging—\$24.00.

YORK ELECTRIC & MACHINE CO.
York, Pa.



Lowest Priced Method of Efficient Spring Lubrication

R & C Oiler comes in 30 ft. rolls. One roll will equip from 6-12 cars. Installed with pliers in few minutes. Real dealer opportunity. Good profits. Write. Exclusive distributors wanted.

R. & C. MFG. CO.
Parkersburg, W. Va.

ALMOND "STRAIGHT LINE" DRILL CHUCKS

When buying Portable Electric Drills be sure to look for the distinctive ALMOND CHUCK, which may be easily identified by the "STRAIGHT LINE" milling on the chuck body.

Write for complete information regarding the new ALMOND "STRAIGHT LINE" CHUCKS.

T. R. Almond Mfg. Co., Ashburnham, Mass., U. S. A.

Big money in this service

Dealers and shops make big money through the control of a franchise which entitles them to the exclusive use of the patented "KLEAN RITE" system of washing and polishing automobiles.

This system has turned a job into an impressive, highly profitable business.

Write for full particulars

Klean-Rite Auto Laundry Company

1710 East 75th St.

Chicago, Ill.

Isolators
Lock
Plates.
An
Exclusive
Vesta
Feature



As Old As The Auto Industry

Vesta has 27 years of experience built into it. The isolators have been used for 8 years. Always in keeping with automotive requirements. Write for the "Book of Facts" and details.

Vesta Battery Corporation
Chicago, Ill.

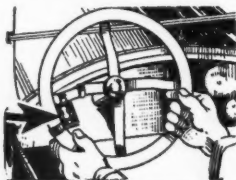
INSTANDIM

Light Control

Right on the Steering Wheel

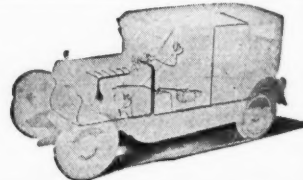
Move the thumb and lights are dim! Attached to steering wheel in 15 minutes. A low-priced convenience. Safety factor. Style A for headlights—\$2.25. Style B for headlights and spotlights—\$4.25. Big discounts—Write.

H & H Mfg. Co., Bucyrus, Ohio



**Packard
Cable**

The Packard Electric Co.
Warren, Ohio



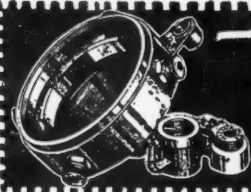
WELCO "NEVA-LOST" GAS TANK CAP \$1.50

The Welker-Hoops Mfg. Co., Middletown, Ct.

EATON

BUMPERS ▽ AXLES ▽ SPRINGS

Factories: Cleveland, Pontiac, Albany
Branches: New York, Boston, Chicago, Philadelphia, Cleveland
Detroit Office: General Motors Building



—Bakelite Case!

This famous roller-type timer is absolutely "short-proof". The only standard timer with Bakelite case

**MILWAUKEE
TIMER for FORDS**

LINCOLN FOR ALL CARS—\$15 to \$36 SHOCK ABSORBERS

CLASSIFIED ADVERTISING

INFORMATION

Six cents a word is the rate for all undisplaced advertisements set solid, regular want ad style; all capitals, 9c. a word; all capitals leaded, 12c. a word; minimum charge \$1 an insertion; payable in advance (see next paragraph).

Ten per cent discount if one payment is made in advance for four or more consecutive insertions.

Add five words for address if replies are to come to a box number address at any of our offices. These replies are forwarded each day as received, in new envelopes, at no extra charge.

Refund will be made if all insertions ordered are not needed, the amount refunded being the difference between cost of insertions given and full amount paid.

Telephone orders must be confirmed in writing same day. No allowances can be made for errors of any kind unless prompt notification is sent us.

When replying to blind ads be careful to put on your envelope the correct box number and do not enclose original letters of recommendation—send copies.

The right is reserved to refuse any advertisement and also to rewrite and edit copy furnished whenever the publishers consider it advisable to do this.

MOTOR AGE

5 So. Wabash Ave., Chicago, Ill.

PARTS

We've Got Everything

In New and Used Auto Parts, Accessories and Supplies, for all makes and models of cars.

Engines; Transmissions; Clutches; Axles; Wheels; Rims; Tires; Radiators; Gears; Axle Shafts; Bearings; Magnets; Starters; Generators; Coils; Batteries; etc., etc.

Ours is the largest stock of its kind in the world.

Warshawsky & Co.

World's Largest Replacement Parts House
1914 So. State St. Chicago, Ill.
No Branches Ph. Calumet 7315 No Branches

HOUSE OF A MILLION
AUTO PARTS

THE LARGEST STOCK OF NEW AND USED CAR AND TRUCK PARTS IN THE WORLD. WE HAVE EVERYTHING.

New and Used Motors, Gears, Axles, Bearings, Springs, Magnets, Generators, Clutches, Starters, Universal Joints, Radiators, Cushions, Wheels (Wood, Disk, Wire), Carburetors, Piston Rings and Pins, etc.

Always mention model and serial number in order.

Write us. All inquiries answered promptly

DOUGLAS AUTO PARTS CO., INC.

2003-5-7-9 South State St. Chicago, Ill.

AUTO Save 50—90% PARTS
2000 Models

NEW AND USED GEARS, AXLES, BEARINGS, SPRINGS, MAGNETS, GENERATORS, ETC. JOBBERS IN BANKRUPT AUTO SUPPLIES.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave. HARTFORD, CONN.

PARTS

ANY PART
for
ANY CAR
NEW
or
USED

Send for Catalogue
Cincinnati Auto Parts
& Wrecking Co.
712-714 Walnut St.
CINCINNATI, OHIO
Parts our middle name

AUTO PARTS

SAVES 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.
310-18 NO. ILLINOIS ST. INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

DOWMETAL PISTONS

Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

SEND FOR PARTICULARS

LAMBERT & MANN CO.
Cylinder and Crankshaft Grinding
215-21 N. Wood St. CHICAGO Phone West 4918

WANTED—Norton Auto Parts Grinder, like new, last model, Hydraulic Feed, Motor Cylinder Grinding & Machine Company, Savannah, Georgia.

MITCHELL, COLUMBIA, LIBERTY, STEPHENS and PREMIER. Parts for all models. Discount to the trade. Mitchell Co., 421 W. 55th St., New York.

ADDRESS: FORD RIDEASY, 223 Grand Ave., W., Detroit, Michigan. Absolutely kills the chatter shocks and irons out the rocking rebounds.

PATENTS and PATENT ATTORNEYS

PATENTS

Secured, Trade-Marks and Copyrights Registered
Prompt service. Highest references. Established 1864.

Milo B. Stevens & Co. Registered Patent Attorneys.
Offices 639 F St., Washington, D. C. 10 Monadnock Block, Chicago, 341 Leader News Bldg., Cleveland, O.

PATENTS

BOOKLET FREE HIGHEST REFERENCES
PROMPTNESS ASSURED BEST RESULTS

Send drawing or model for examination and report as to patentability

WATSON E. COLEMAN, Patent Lawyer
644 G. Street, N. W., Washington, D. C.

Attorney-at-Law and Solicitor of Patents
C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.
McGill Building, WASHINGTON, D. C.

PATENTS

Write for my free Guide Books "How to Obtain a Patent" and "Invention and Industry" and "Record of Invention" blank before disclosing inventions. Send model or sketch of your invention for instructions. Promptness assured. No charge for above information. Clarence A. O'Brien, Registered Patent Lawyer, 232-C Security Bank Building, directly across street from Patent Office, Washington, D. C.

AGENTS and DISTRIBUTORS

SALESMEN AND DISTRIBUTORS WANTED

The originator of the valve-in-head motor and founder of the Buick automobile has perfected the simplest and most efficient carburetor in the world. Mr. Buick considers the Buick-Hi-Power Carburetor his greatest achievement. Sold on guarantee to increase efficiency of motor 25% or money back. Write quick for details. David Buick Carburetor Corporation, 3934 McGraw Ave., Detroit, Michigan.

AGENTS AND DISTRIBUTORS

WANTED—Distributors and agents for our Hot Spot Manifold Heater and Improved Foot Brakes for "Chevrolet." Full details on request. Mosey & Mosey, Inc., 1418 Tenth Ave., Seattle, Wash.

BUSINESS OPPORTUNITIES

ATTENTION ACCESSORY MANUFACTURERS—I financed an item of unusual merit which we have been unable to put over in a big way, due to other business interests and unfamiliarity of accessory industry. Patents have been allowed us, we have all dies, etc. Will sell outright or turn over on a royalty basis to responsible manufacturer with sales organization. Details and sample on request. Address Box 6207 care MOTOR AGE, 5 So. Wabash Ave., Chicago, Illinois.

PARTNER WANTED

ESTABLISHED business. Want partner with \$3,000 to help finance car agency. Monroe Motors, 2014 Welton St., Denver, Colorado.

FOR SALE—Best located Garage in city of 3,000, located on 5 Highways. Only transcontinental route open year round. Wonderful health center. Postal brings details. HIGHWAY GARAGE, Deming, New Mex.

FOR SALE—Modern complete Piston Ring Manufacturing plant. Present production 500 rings per day. Situated in Eastern Pennsylvania. Address Box 6208, care MOTOR AGE, 5 So. Wabash Ave., Chicago, Ill.

GOOD IOWA FARM TO TRADE—For garage or stock of automobile accessories. Address Box 406, Greene, Iowa.

HELP WANTED

GARAGE TOOL SALESMEN

Wanted by substantial manufacturer of complete line hand-forged tools. Established 17 years. Desirable protected territory still available. Unusual opportunity. Good income with small investment in samples and stock. Write fully, giving references, past connections. Appointments made at once if qualified. Plomb Tool Co., Los Angeles, Calif.

MANUFACTURERS' REPRESENTATIVES — Aggressive, successful men now selling and having the confidence of the leading auto accessory jobbers in their respective territories of the Pacific Coast, Southern States or Canada, who can secure their whole-hearted support on a proven auto accessory, backed by a vigorous and consistent sales and advertising campaign. Manufacturer, a well established middle-west company, in business 25 years. Exceptionally attractive propositions for qualifying parties. Address Box 6205 care MOTOR AGE, 5 So. Wabash Ave., Chicago, Ill.

WANTED SALESMAN for stamping and tools by an amply financed company. Plant located in central states. One who is able to assume responsibility of keeping plant filled with profitable business, for such an individual attractive proposition is offered. All correspondence held strictly confidential. Address Box 6204, care of MOTOR AGE, 5 S. Wabash Ave., Chicago, Ill.

SALESMAN WANTED—Experienced accessory salesman wanted to handle dash controls as a sideline. Richland Auto Parts Co., Mansfield, Ohio.

MISCELLANEOUS

EXPORTERS—We can increase your sales in Argentina and Uruguay; commission basis. References. Casa Journal Company, James Downey, Calle Bartolome Mitre 966, Buenos Aires, Argentina.

RACING EQUIPMENT

FOR SALE—Six racing cars—4 polo cars—including 2 Millers, 2 Duesenbergs, and parts. Will sell one or all. Address Box 6201, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

WANTED—Dirt Track Racing Car or Motor. Address Box 6206, care MOTOR AGE, 5 So. Wabash Ave., Chicago, Illinois.

If you want to dispose of surplus equipment let
MOTOR AGE CLASSIFIED ADVERTISING do it for you

G-H TENSION RINGS

It's all

in the Metal

The Choice of Good Mechanics for Years

G-H Tension Rings are made of the highest grade of steel obtainable so tempered by our own special process that they will never lose their original resiliency and tension.

For this reason they not only make but keep a motor running and sounding like new. They stop piston slap and oil

pumping and restore economical operation.

It is this *lasting* efficiency which G-H Rings insure that has made them the choice of good mechanics for years.

Retail price 20 cents each. Three sizes fit 90% of all cars. Mention width when ordering. Specify G-H for *lasting* customer satisfaction!

G-H Tension Ring Co.

8 E. Mt. Royal Ave., Baltimore, Md.



VALVE SPRINGS

Replacement Valve Springs represent a *real* replacement opportunity. We are ready to supply valve springs for 95% of all cars and trucks in any quantity.

It Pays to Buy a Kellogg

Gasoline Drive Compressor

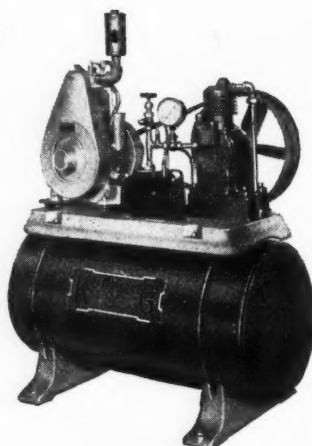
The Price is Right

The Kellogg GE-251-S is the only one being made for small, unwired stations.

Standard in every way. Other sizes. Send for literature.



New Kellogg Air Tower attracts the motorist by night and day. Air and water service combined. Price, only \$60 net.



GE-251-S
150 lbs. pressure
30' hose

KELLOGG MANUFACTURING CO.
ROCHESTER, N. Y.

Beyond Compare for Pumping Air

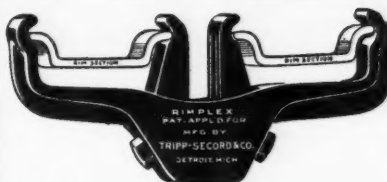
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Balloons call for RIMPLEX

Every owner who wishes to carry a second or third spare wants it held securely—without danger of coming loose—without rattle or chafing.

RIMPLEX appeals to this great field of buyers.

Type "A"—RIMPLEX—fits all 30x3 and 3 1/2 clincher rims.....\$3.00

Type "B"—RIMPLEX—fits all 3 1/2 and 4 S. S. and 4.40 balloon type rims..... 3.50

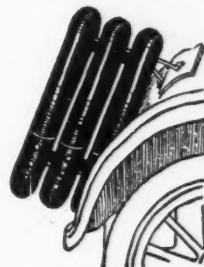
Type "C"—RIMPLEX—fits all 4 1/2 and 5.25 and 6.20 balloon type rims..... 4.00

TRIPP-SECORD & CO.

606 Kerr Bldg.

Detroit, Mich.

Using two tires



Using three tires

Rimplex

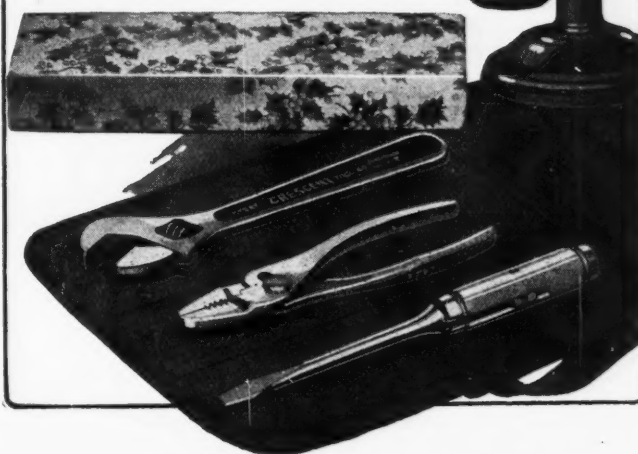
The Bull Dog Grip

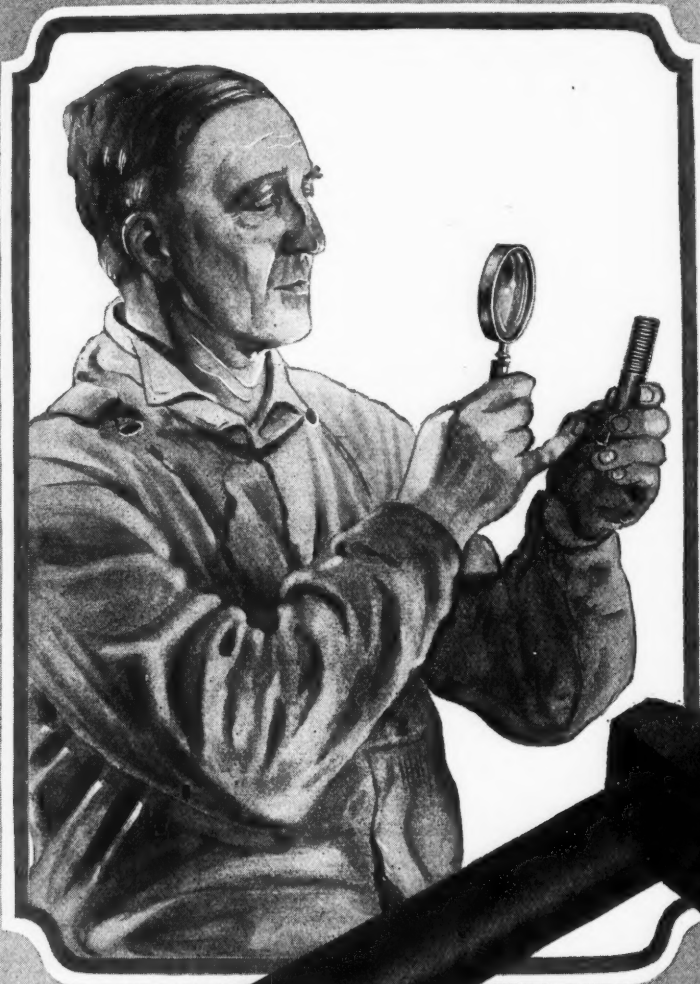
SECOND AND THIRD SPARE TIRE CARRIER

Use your telephone and sell CRESCENT KITS by the carton

There is a big market among concerns with long lists of customers or employees to be remembered at Christmas time. The Crescent Kit is novel, useful, attractive and moderate in price. Make the most of it.

CRESCENT TOOL CO.
208 Harrison Street JAMESTOWN, N. Y.
Originators of the Crescent Wrench





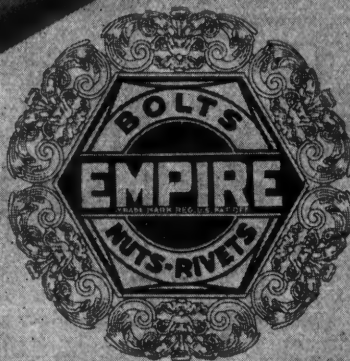
MEN—not METAL

You reckon the cost of scrapped bolts and nuts in men, not in metal.

The cost of a discarded bolt is little enough. But the cost of time & the labor involved in trying to make a bad bolt fit, removing the nut, discarding the bolt, and looking for a good one to replace it & repeated hour after hour day after day & this is the cost that counts heavily and mounts rapidly and cuts deeply into profits.

Empire New Process bolts eliminate this waste. Their built-up threads have six times the accuracy of cut threads, and many times the strength. So they always fit and never strip. They conserve the workman's time and lighten his task.

They cost a trifle more than some others & but they save so very much more that their price represents a real and tangible economy.



RUSSELL, BURDSALL & WARD
BOLT & NUT COMPANY

PORT CHESTER, N.Y.

FEMBERWICK, CONN.

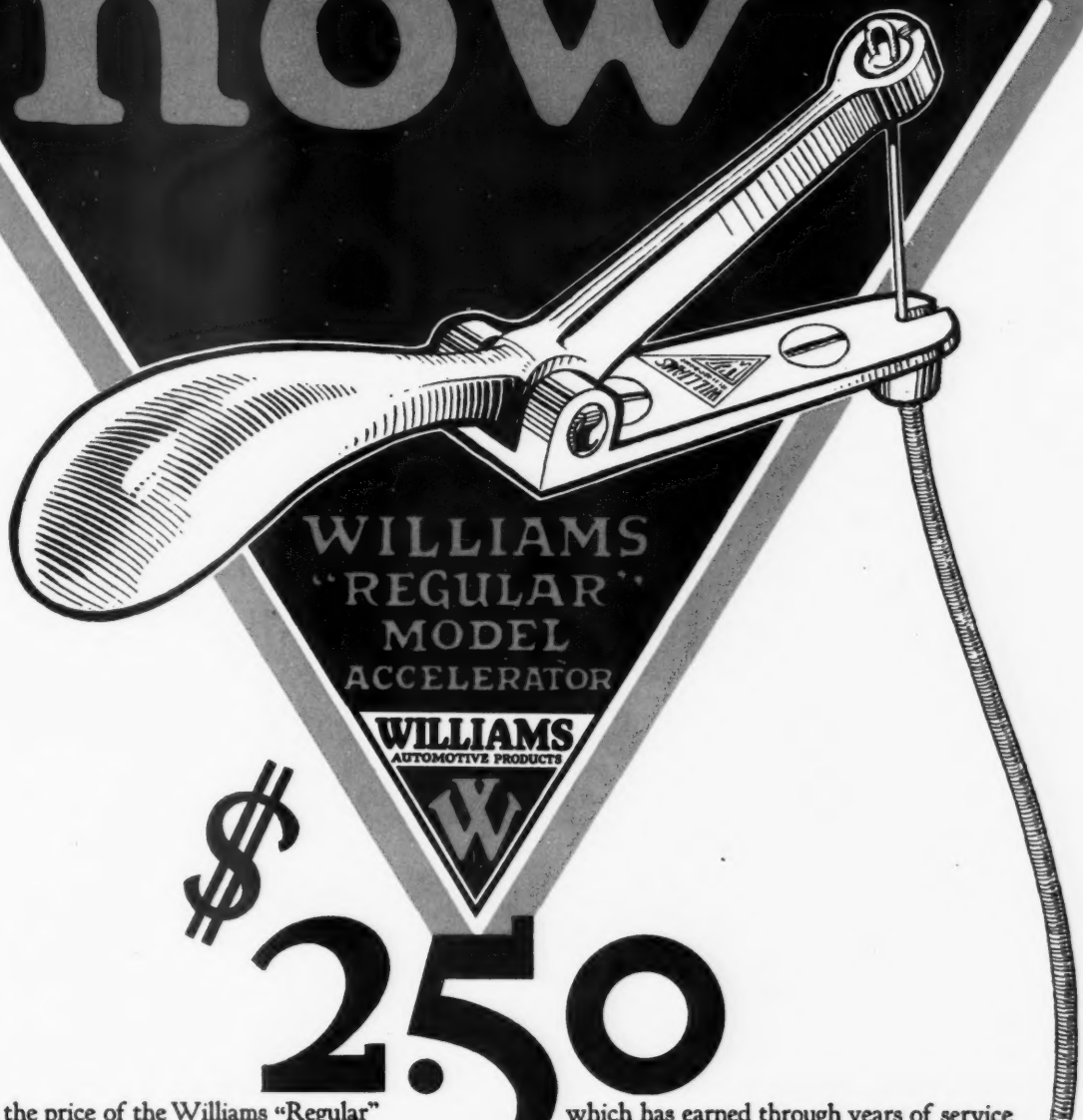
CHICAGO

SAN FRANCISCO

ROCK FALLS, ILL.

Makers of Bolts, Nuts and Rivets Since 1845

now



\$
250

For 7 years the price of the Williams "Regular" model Accelerator has been \$3.00. At that price more than a million were sold.

Now, the price is reduced to \$2.50. And at this new low price, it is a *super-value* in the Ford accessory field. Greatly increased production and new factory equipment make this price reduction possible.

Quality, appearance and performance remain unchanged. The product is the same, dependable Ford foot throttle

which has earned through years of service the right to be called "the finest Ford Foot Throttle in the World."

Nothing is new but the price.

Jobbers: Order your service stock. It will be billed at the new price. Dealers: This price reduction will make Williams Accelerators move even faster. Get your order to your jobber, quickly, and include one of the new demonstrating display stands.


The price of the Williams "Junior" Model Accelerator remains as before—\$1.50

WILLIAMS BROS. AIRCRAFT CORP.
25th and Potrero Avenue, San Francisco, Calif.



WILLIAMS ACCELERATOR

for FORD CARS



When you sell
Edison MAZDA
Auto Lamps
you can depend on
two-fisted sales
assistance of the
kind that really
shows on the
balance sheet

The 5-lamp kit that enables you to sell five lamps instead of one; the big outdoor poster advertising campaign; full pages in color in The Saturday Evening Post and in farm publications which go into rural communities; sales-creating counter cabinets and wall cabinets; striking window displays, indoor signs, outdoor signs and muslin posters—these things have made Edison MAZDA Auto Lamps one of the most extensively advertised auto accessories. And the support given dealers this year is a promise of what you can expect next year and every year.



EDISON MAZDA LAMPS
A GENERAL ELECTRIC PRODUCT
